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Paper Mill Employment Gains 10 Per Cent

Wisconsin Industrial Commission Reports Total Number of Mill Workers In State Rose To 22,900 In June, A Gain of 2.8 Per Cent In Month and 9.6 Per Cent For Year — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 29, 1940—Indications of the production trend of the Wisconsin paper and pulp mills is shown by the reports compiled by the statistical department of the Wisconsin Industrial Commission, in which it is shown that employment is approximately 10 per cent above a year ago.

Total mill employment reported for June, 1940, was 22,900 workers, as compared to 22,200 in May of this year, and 20,900 in June of 1939. This is a gain of 2.8 for the month, and 9.6 for the year.

Estimated payrolls have increased from $536,000 per week in June, 1939, to $612,000 in June, 1940. The weekly payrolls in May of this year were estimated at $587,000. This represents a gain of 14.1 per cent over a year ago, and 4.3 per cent over the month of May.

Average earnings per worker in June of this year were $26.75 for an average work week of 42.1 hours, making the average hourly earnings 63.5 cents.

Paper Mill Employment Up 7.4 Per Cent

These gains were among the largest of any industry in the state, for which the increase in total number of workers for the state was 7.4 per cent over June a year ago, and estimated weekly payrolls were up 12.5 per cent over a year ago.

In the Milwaukee area, largely devoted to converting, cartons and specialties, 22 concerns reported a total of 2,087 workers, a gain of 4.7 per cent for June over May of this year. Weekly payrolls in June were $53,273, up 11 per cent from the previous month. Average earnings per worker were $25.53 per week for 40.9 hours, with an average hourly rate of 62.4 cents.

Renovation of Former Patten Mill Progresses

Renovation of the former Patten Paper Company mill at Kaukauna, Wis. has proceeded to the point where one machine will soon be ready for operation on wrappings manufactured from waste stocks. The mill was purchased last spring by Cohen Brothers of Chicago, and the present plan of the owners is to start with one machine.

New flooring has been built alongside the machines, and new piping and syphons have been placed in the driers. New vats and a new sand trap also have been installed, and the four beaters have been reconditioned and supplied with new motors. A new roof has been built on the pump house, and the roof and skylights of the boiler room have been rebuilt. A new stock chest has been ordered also. The Fourdrinier machines are being gone over thoroughly, and several new bearings have been supplied for those worn out. Considerable repainting also has been done.

Operations probably will not be started until fall, awaiting completion of a new power plant on the Patten water power site by the City of Kaukauna. Gust Bauer is in charge of the renovating operations.

Thilmany Steps Add New Shifts

To take care of increased business, the Thilmany Pulp and Paper Company, Kaukauna, Wis., has added new shifts in the converting departments, where two new rewinding machines and a new supercalender stack have been added. The total payroll of the company now embraces more than 1,000 employees.

Finishing, waxing and printing departments are being moved into the former Union Bag and Paper Corporation buildings to relieve congestion, and to provide for necessary expansion of the calender, rewinding and asphalt departments, and also for extension of the main office. They recently leased the Union Bag buildings and remodelled them.

The Thilmany company has engaged Mrs. Hazel H. Leedke of East Chicago, Ind., as industrial nurse. She succeeds Miss Stella Van Ryzin, who is resigning August 1 after serving since 1936. Miss Van Rvzin is to be married in September.

Tolls Assessed Against Paper Mills

Tolls of $113,233.34 will be collected from paper mills and other water power users along the Wisconsin River, according to a schedule of tolls levied by the Wisconsin Valley Improvement Company, Wausau, Wis., for the first six months of this year. The schedule has been submitted to the Wisconsin Public Service Commission for approval, and objections will be heard at a hearing scheduled August 8. The improvement company regulates flowage of the river.

Among the mills assessed are the Consolidated Wa-

(Continued on page 40)

England Looks to Canada for Pulp and Paper

Report At Annual Meeting of Amalgamated Press In London Comments On Drastic Control Measures and Acute Shortage of Paper —Canada's Mills Are Now Only Source of Supply—Other News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 29, 1940—Some interesting sidelights on the newsprint industry in England and its dependence on Canadian supplies are contained in a report just received here of the annual meeting of the Amalgamated Press, Limited in London, at which Lord Camrose, head of important newspaper interests in England, including the London Daily Telegraph and the Sunday Times. In the course of his remarks, Lord Camrose said:

"Our various printing works, which are among the largest in the country and which have been established for nearly fifty years, are, of course, seriously affected by the present restrictions, and, with the possibility of still further reductions, it will be necessary to close down one or more of our works.

Up-to-Date Papermaking Plant

"Raw material is vital to us also in our papermaking company, the Imperial Paper Mills, Limited. We have a fine and up-to-date paper-making plant, on which, as I have told you on previous occasions, we have spent a great deal of money in modernization and on the installation of new machinery. But the best machinery in the world is of no use unless you have the material with which to feed it.

"For the first six months of the financial year the mills were running to capacity, and although selling prices were not good, they were on full production and results could be considered satisfactory in the circumstances.

Subject to Government Control

"At the outbreak of conflict the paper trade became subject to Government control, which imposed maximum selling prices on all classes of paper and regulated prices for paper-making materials. On October 28th the Control took over all our pulp stocks and ordered that all contracts for raw materials were to be held at the disposal of the Minister of Supply. From then onwards supplies have been rational and maximum prices fixed, and today paper can only be manufactured under license obtained from the Control.

"The Imperial Paper Mills controls in Canada the Gulf Pulp and Paper Company, which manufactures 60,000 moist tons of mechanical pulp per annum. Arrangements had been made before the war for the whole of this tonnage to be shipped to the company's mills at Gravesend, and a freight charter had been signed accordingly. Owing to the operation of the Control the whole of this raw material is held at the disposal of the Government, and we have no knowledge of the quantity which may be available for our own use.

Former Supply Has Ceased

"In the past practically all the pulp used by the English paper mills has come from the Baltic and Scandinavia. That supply has entirely ceased. The present position is that the Imperial Paper Mills, whose manufacturing capacity is now nearly 4,000 tons per week, is, under present regulations, allowed to produce about 20 per cent of that capacity. This situation is not peculiar to our mills. Every papermaking plant in the country is in the same plight.

"We gave long and anxious consideration to the policy we should pursue in the serious circumstances which confronted us. Our unanimous conclusion was that we must do nothing which would jeopardize the strength of the undertaking, and that we must husband our financial resources against the contigencies inherent to a time of such crises."

May Reopen Quebec Pulp and Paper Mill

Recently tentative arrangements have been under discussion for the re-opening of the plant of the Quebec Pulp and Paper Corporation at Chicoutimi, which has long been idle. This plant has capacity for the production of 600,000 lbs. of dry ground wood per day. While there still exists the possibility that operations may be resumed, the Montreal Gazette reports that the chances of such resumption have not been improved by developments of the past month, particularly the collapse of France and the opening up of a new phase of the conflict in the Battle for Britain. It appears that in recent months the management has had prepared an independent expert report on the general situation, and had entered into negotiations with the British paper purchasing board, for whose information the report was prepared, with a view to having the board finance the outlays necessary to put the mill in production, either of groundwood pulp or sulphite. These negotiations were progressing not unsatisfactorily when the picture overseas changed so radically with the French collapse. In the past couple of weeks the matter has been dormant, presumably because the British authorities are waiting to see just how the present phase of the war will develop. Some 3 to 4 million dollars would be necessary to put the company back in operation on a good competitive basis, it is said.

Canadian Newsprint Exports Rise

Exports of newsprint from Canada scored another big advance in June, according to figures just released from Ottowa. They amounted to 6,413,093 cwt., valued at $15,168,194, as compared with 4,893,105 cwt., valued at $10,681,411 in June, 1939. Of this amount 4,927,386 cwt., valued at $11,635,517 went to the United States. The next largest purchasers were the United Kingdom, with 471,178 cwt., valued at $985,323; Australia, with 153,743 cwt., valued at $413,178; Brazil, with 82,381 cwt., valued at $185,760; China, with 56,517 cwt., valued at $181,405; Mexico, with 77,977 cwt., valued at $180,320; British South Africa, with 65,012 cwt., valued at $194,215; British India, with 61,565 cwt., valued at $158,238; and Uruguay, with 52,391 cwt., valued at $124,859.

Exports of wood pulp had a value of $5,779,624, as compared with $1,926,282 in June, 1939.

Wholesale Paper Demand Lags in Midwest

General Uncertainty of New Tax Program and Trend of Future Business Attributed Cause of Current Lag In Chicago Paper Market — Old Waste Paper Market Strong—Fine Paper Salesmen Association Active.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 29, 1940—Chicago paper executives believe it is possible to get some idea of the uncertainty now plaguing the industry by the fact that a number of Chicago group meetings scheduled for next week have been postponed until the end of the first week in August. By that time, it seems obvious, the paper industry hopes to know more about the defense tax program, the political picture and the general course of business itself. Meanwhile, local business shows little disposition to change over last week. Demand continues to lag to a noticeable degree and a short tour through the printing plants of the city shows that "postponements until Fall" of planned campaigns is somewhat of a regular thing. While the wholesale business locally is somewhat slow, mills report from two to five weeks back on orders and the new price structure seems to be holding very firm. Orders are "spotty" and in not overlarge quantities, according to reports. Kraft papers are perhaps in the strongest spot, though groundwoods and newsprints gave a good account of themselves last week. Printing papers were rather slow, reflecting the situation in the retail market and books and covers were reported to be "drifting along" at the higher price level. Bonds and ledgers were in about the same category. The board market was fairly active with prices firm while the waste paper market continued to show comforting strength in virtually all grades.

Fine Paper Association Active

The Chicago Association of Fine Paper Salesmen, organized early in the Spring to perpetuate better understanding of mutual problems between sales executives of Chicago's fine paper houses, has come a long way since that time according to local reports. More than 100 members have affiliated with the group representing major wholesale paper interests of the city of which L. W. Pusey of the Swigart Paper Company is the president and A. C. Muller of the Messinger Paper Company, vice president. Among the firms identified with the new movement in Chicago are the following: Empire Paper Company, Whitaker Paper Company, Fick Paper Company, J. W. Butler Paper Company, McIntosh Paper Company, Bershire Paper Company, Fort Dearborn Paper Company, LaSalle Paper Company, Hobart Paper Company, Messinger Paper Company, Import Paper Company, Midland Paper Company, Tattershall, Incorporated, Swigart Paper Company, Moser Paper Company, Parker, Thomas & Tucker, Murnane Paper Company and the Seaman Paper Company. Each of the sales executives of these companies represented on the roster of the Chicago Association of Fine Paper Salesmen is pledged to the general goal of the organization to develop fellowship, improve sales methods in this area, work for a high standard of sales ethics and enhance the standards of fine paper salesmanship. It is understood that the Association will, in the Fall, begin a series of meetings at which time matters pertaining to the manufacture and production of paper and in relation to the most accepted successful methods of selling paper will be presented to the group.

Paper houses outside of Illinois and selling into the State may secure a better conception of the new application of the Illinois sales tax laws through the following: (1) If a seller owns goods in Illinois and sells them at retail to Illinois purchasers, the sales are clearly taxable under the law. (2) If a seller owns goods in Illinois, sells them outside the State and delivers the goods outside the State the sales are not taxable. (3) If a seller whose principal place of business is outside Illinois, accepts and ships goods across the State line to a consumer in Illinois he now becomes taxable under Revised Article 5, if the State is in a position to assess the levy or penalty for nonpayment. Those in (1) and (2) are not affected by the new Rule 5 but those in (3) are affected if they maintain a sales office or agents in Illinois or if salesmen are in Illinois soliciting orders. Until there are court rulings to the contrary, those in Class 3 and that includes many paper firms with establishments in Illinois whose sales were not taxable even though at retail while the interstate commerce clause was in effect. Revised Article 5 is now being tested in the Sangamon County (Springfield) courts by Indiana coal companies maintaining sales offices, agencies and traveling sales representatives in this State.

Salesmen Hold Third Golf Outing

Sixty-five members and guests of the western division of the Salesmen's Association of the Paper Industry took time off on July 19 to participate in the third of the series of golf outings scheduled. On this particular occasion, the sales executives journeyed to the long and difficult Bob-O-Link Golf Club for the usual luncheon-golf-dinner affair under the direction of Chairman Pat Patterson and Co-Chairman Ed Rolaine.

L. L. Brown Appoints Distributors

The L. L. Brown Paper Company of Adams, Mass., announces the appointment of the Cincinnati Cordage and Paper Company as distributor of L. L. Brown's Linen Ledger, Greylock Linen Ledger, Escort Ledger and Machine Posting, and Escort Bond in Dayton, Ohio, and Knoxville, Tennessee; and of Escort Ledger and Machine Posting and Escort Bond in Cincinnati, Ohio. The Cincinnati Cordage and Paper Company, long prominent in fine paper merchandising, is equipped to give immediate service on the L. L. Brown papers mentioned.

The Crescent Paper Company of Indianapolis has been appointed a distributor of Escort Bond, the 50 per cent rag bond recently introduced by the L. L. Brown Paper Company, Adams, Mass.

Make Elaborate Plans for TAPPI Meeting

The Ladies Program

The program of entertainment for the ladies attending the 1940 Fall Meeting of TAPPI in Seattle, August 20-23, has just been announced by Ray Smythe, Chairman of the Ladies Program Committee. "In planning the ladies program," said Mr. Smythe in his announcement, "the dominating thought was to provide sufficient entertainment and opportunity for seeing Seattle and the Puget Sound country to show our visitors a really enjoyable time, and yet to allow time for relaxation.

"The scheduled program for the ladies starts Tuesday afternoon with a fashion show of Fall models in the auditorium of Frederick & Nelson's, leading Seattle department store. Following the fashion show, Miss Florenz Clark will talk on commercial art and illustrating, and will exhibit a number of her paintings. The committee of ladies in charge of the Garden Tour has selected two of the most beautiful gardens out of the many in Seattle for our guests to visit. The ladies interested in gardening will find the Wednesday afternoon program a highlight of their stay in Seattle.

"A short sightseeing tour of Seattle, including beautiful Volunteer Park, the University of Washington Campus and Lake Washington Boulevard, will precede the garden visits. The afternoon will conclude with a tea at the Broadmoor Golf Club, one of Seattle's lovliest spots. We haven't forgotten that there will be many fine golfers among the ladies coming to Seattle, so arrangements have been made for playing at Broadmoor Wednesday morning and afternoon. The golfers may join the garden tour at Broadmoor if they so desire and enjoy the tea at the clubhouse.

Victoria Trip

"Many people travel across the continent to visit Victoria, B. C., famous as English type city of beautiful homes and gardens. The world famous Butchart's Gardens are unsurpassed and I can think of no more enjoyable place to have luncheon than the Empress Hotel in Victoria. The boat trip from Seattle to Victoria and return will give our guests an opportunity to see the variety of scenery to be found in the Puget Sound country.

"But the ladies should not forget to bring along identification papers," cautioned Mr. Smythe, "for the immigration officers are under strict orders to satisfy themselves of the citizenship of each person coming into the United States from Canada. To avoid delay identification papers are essential at this time. A birth certificate is best. An affidavit by older relatives or by mother or father, stating time and place of birth is satisfactory. A voter's registration card is also proof of citizenship. Canadians wishing to reenter this country should obtain a reentry permit in advance of embarking upon the boat.

"For Friday, August 23, the committee has arranged an interesting luncheon with Mrs. A. G. Natwick of Camas, Wash., describing her experiences as a delegate from Washington to the Republican National Convention at Philadelphia. Immediately following the luncheon there will be a bridge tournament with a full complement of prizes.

"There will be two dances during the meeting, an informal dinner dance on Tuesday evening, August 20th and a banquet and dance in the Spanish Ballroom of the Olympic Hotel on Friday evening, August 23rd.

"The ladies who have arranged the various functions for the visitors are looking forward to the meeting and will do all they can to make the 1940 Fall Meeting in Seattle, one to be long remembered as a most enjoyable occasion."

Reservations on TAPPI Special

William A. Geiger of Chicago, Chairman of the Transportation Committee for the 1940 Fall Meeting of TAPPI announced on July 15 that he had 83 definite reservations on hand for the TAPPI Special Train which is scheduled to leave Chicago Friday evening, August 16 at 11 P.M. (Central Standard Time) over the Northern Pacific Railway.

"Many more have indicated their intentions to take the TAPPI Special for Seattle to attend the 1940 Fall Meeting which is to be held August 20-21-22-23rd at the Olympic Hotel in that city, but have not made definite reservations so we aren't counting them yet," said Mr. Geiger.

"Interest is running high in this second Fall Meeting of TAPPI to be held on the Coast and we know that the special will be filled for a most enjoyable trip out to Puget Sound. You will note among the reservations made to date a large number of names that were on the reservation list for the special which the Northern Pacific ran in September, 1934.

"Better make your reservations on the TAPPI Special immediately so the Northern Pacific will have plenty of Pullmans ready in Chicago by 11 P.M. (C.S.T.) on Friday, August 16. Remember, the Northern Pacific is staging a big rodeo for its guests on the special at Livingston, Montana, on Sunday the 18th, and that we will arrive in Seattle at 8 P.M. Monday evening, August 19th, the night before the meeting opens.

"Send your reservations to W. A. Geiger at 400 West Madison Street, Chicago. Write or wire but do it now.

"As a number of people have indicated a desire to save time by flying from Chicago to Seattle we expect the group will be sufficiently large to warrant the United Air Lines putting on a special plane, one of its 21-passenger twin-engine Douglas transports. United Air Lines planes leave Chicago in the evening and arrive in Seattle the following noon.

"A number of men are driving and taking their families to the Coast. The roads are good and the scenery excellent."

Among the reservations for the TAPPI Special Train starting from Chicago August 16 for the 1940 Fall Meeting of TAPPI in Seattle, August 20-23, are the following: Mr. and Mrs. C. L. Batchelder, Mr. and Mrs. O. W. Callighan, C. H. Champion, Mr. and Mrs. Geo. C. Dunn, Mr. and Mrs. Ivar Ekholm, Mr. and Mrs. Roger J. Egan, Mr. and Mrs. Clayton Ewing, Frank Fieweger, Mr. and Mrs. L. L. Griffiths, Mr. and Mrs. C. C. Heritage, Mr. and Mrs. R. A. Hayward and Jack Hayward, Mr. and Mrs. A. B. Hansen, Mr. and Mrs. J. W. Hemphill, Mr. and Mrs. M. C. Jones, Mr. and Mrs. C. J. McMahon, Mr. and

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British Columbia Produces More Paper

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., July 25, 1940—Estimated value of the pulp and paper production of British Columbia during 1939 was $16,191,000. This is considerably over the ten year average valuation which was $13,625,000 and represents the highest figure for any year since 1930 with a single exception of 1937 when the valuation reached a total of $17,214,000.

During the past year exports of pulpwood amounted in value to $11,000. This represents a marked decline over the $26,000 valuation which formed the average for the past ten years export. In 1933 pulpwood exported from British Columbia amounted in value to $55,000. In 1934 this had dropped to $46,000 and in 1935 it declined to $23,000. This figure was cut in half in 1936 with a drop to $11,000 and an equally startingly reduction took place in 1937 with a drop to $5,000. No exports of pulpwood are recorded for 1938 and during the past year shipments valued at $11,000 were made.

In addition to revealing the above figures, the report of the Forest branch of the British Columbia Department of Lands also revealed 1939 figures on production of newsprint and other papers. Newsprint production during 1939 totalled 216,542 tons, while comparative figures are: 1933—237,107 tons; 1934—267,406 tons; 1935—262,123 tons; 1936—276,710 tons; 1937—264,136 tons; 1938—179,639 tons. This means that the British Columbia production in 1939 has almost reached the average production for the past ten years which was 235,120 tons. During the early part of 1939 the paper market was somewhat upset and production in British Columbia plants was seriously restricted, some plants being closed down entirely. With the outbreak of hostilities all plants were swung into production and as more and more paper producing countries in Scandinavia and the Balkans became involved production in British Columbia steadily increased to cope with the demands.

Production of paper other than newsprint in British Columbia reached an almost high mark in 1939 with a total of 50,870 tons. This figure was only exceeded in 1937 with production of 53,026 tons. Average production for the past ten years has been 33,045 tons.

In addition to 249,000 tons of pulp manufactured into paper in the province during the past year, 82,500 tons of pulp were shipped out of the province during the year for manufacture elsewhere.

Construct Dam at Lois River

VANCOUVER, B. C., July 25, 1940—Expenditure of $900,000 on the construction of a concrete dam at Lois River where the power plant of the Powell River Company, Ltd., is located 15 miles south of its big pulp and paper plant is involved in a contract which has been awarded to Stuart Cameron & Co., Vancouver, B. C. About two years will be required to complete this project, the biggest of its kind to be undertaken in British Columbia in several years. About 200 men will be employed on the job at the height of the construction period.

The vast bulk of materials going into the dam's construction will be produced in British Columbia or other Canadian provinces. The dam will be of the constant radius arch type 650 feet long, with a maximum height of 187 feet. About 70,000 cubic yards of concrete will be required.

This dam will replace the present temporary log crib dam which was constructed in 1930 and which is about one-half mile upriver from the site of the proposed new dam. It will also permit the retirement of approximately 2600 feet of temporary wood stave penstock, which was put in at the same time. The new dam will raise the level of the lake about 50 feet and will permit the installation of a second 18,000 KVA hydro-electric unit at the company's power plant at Stillwater, if and when it becomes desirable in the future.

Immediate increase in power output, however, is only about 1500 horsepower, the primary purpose of the dam being to retire the old temporary construction and thus improve the security of the present operation.

Completion of this dam will round out a program of plant improvements, which has been carried out over the period of the last few years, and which includes the installation of a Flakt drier as a complement to the Kamyr pulp machine installed by the company some three years ago.

Buy Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 31, 1940—During the week ended July 13, the Government purchased $3,110,294.52 worth of paper under the Walsh-Healey Act. In all cases, it is an indefinite contract other than the general schedule and the purchases are to be made if and when needed as follows: The Whitaker Paper Company, Baltimore, Md., $671,751.00; Paper Corporation of United States, N.Y.C., $36,867.20; the Mudge Paper Company, Baltimore, Md., $193,061.60; Walker-Goulard-Plehn Company, Inc., N.Y.C., $20,536.20; the Baxter Paper Company, Baltimore, Md., $43,425.00; Butler Company, Chicago, Ill., $109,070.00; Virginia Paper Company, Washington, D. C., $47,750.00; Marquette Paper Company, Chicago, Ill., $90,365.00; The Barton, Duer & Koch Paper Company, Washington, D. C., $290,346.30; Mathers-Lamm Paper Company, Washington, D. C., $49,412.95; Cauthorne Paper Company, Inc., Richmond, Va., $108,150.00; the Aetna Paper Company, Dayton, Ohio, $466,615.00; the Old Dominion Paper Company, Norfolk, Va., $255,615.57; R. P. Andrews Paper Company, Washington, D. C., $507,409.25; and Stanford Paper Company, Washington, D. C., $219,919.45.

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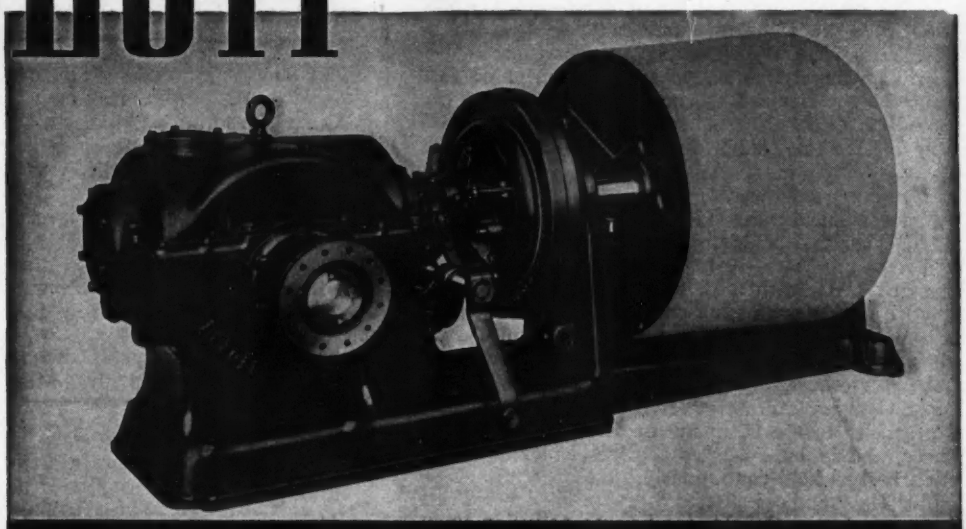

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Obituary

H. E. Raymond

H. E. Raymond, President of Missisquoi Corporation, died on Tuesday morning, July 23rd, at the New York Hospital, following an operation.

Mr. Raymond was a mechanical engineer of rare ability and recognized as one of the outstanding paper mill engineers in this country. He was born January 13, 1881 at Cambridge, Mass., son of Thomas C. and Josephine M. Watt Raymond. His father was a mining engineer.

Mr. Raymond received his early training in the public schools of his birth place and later was graduated from the Massachusetts Institute of Technology, Class of 1903, with a B. S. degree. He began the practice of his profession soon after his graduation on the Pacific coast, where he remained until 1911 when he returned to the Missisquoi Pulp Company and, with others, organized the Missisquoi Pulp & Paper Company. For twelve years he rendered valuable service to the Company in the capacity of Engineer, and in 1924 was made President, which position he had held continuously.

Mr. Raymond's interests were not solely in his chosen professional field, for he was active in town affairs both at Sheldon Springs and St. Albans, town of his residence. For three years he served as Mayor of St. Albans and in that important civic position rendered valuable service to his fellow men. He was a member of the several clubs and organizations in St. Albans, the Engineers' Club of Boston, and the State and City Chambers of Commerce. He was also President of the St. Albans Hospital, and rendered exceptional service to that fine institution.

In 1906 he married Ruth MacNaughton of Cambridge, Mass., who survives him with their four children, H. E. Raymond, Jr., of Utica, N. Y., Anna R. (now Mrs. J. Gordon Carr) of New York City, Richard W., now with Missisquoi Corporation and Barbara, at home. Also surviving are three sisters, Dorothy, Eleanor, and Rachel, and a brother, Tom.

William W. Jenks

William W. Jenks, 79, formerly president of Stimpson & Company, Inc., for 52 years, died July 1, at his residence, 24 Sachem street, Lynn, Mass. Mr. Jenks retired from business ten years ago.

He was a Mason, a member of the Ancient and Honorable Artillery Company, and a charter member of the Boston Chamber of Commerce. He was a member of the Ionia, Essex and Oxford Clubs of Lynn.

Two sons, Roger W. Jenks of Arlington, Mass., and Robert C. Jenks of Melrose, Mass., are living.

Officers and a delegation from the New England Paper Merchants Association attended the funeral service, held at the Richardson Funeral Home, Lynn, July 3.

John F. Hamilton

John F. Hamilton, 75, vice-president and one of the founders of Field-Hamilton-Smith Paper Company, Omaha, Neb., died July 24, in Lincoln, Neb., where he had lived the last eight years. He formerly lived in Omaha for many years. The company was founded here in 1916.

Mr. Hamilton was a charter member of the Omaha Rotary club. He had been ill since Tuesday morning.

His wife, Nellie Bird Hamilton, survives.

Funeral services were held Saturday in Lincoln at 9:30 a.m. at the Splain, Schnell & Griffiths' chapel with Rev. Garth Sibbald in charge. Burial will be in Forest Lawn Memorial park here.

Howard F. Weiss

Howard F. Weiss, president of the Research Products Corporation, Madison, Wis., died Sunday, July 7, from a heart attack while fishing on Wolf Lake, near Wisconsin Dells, Wis. He was 57 years old.

Mr. Weiss formerly was director of the United States Forest Products Laboratory at Madison, Wis., and was treasurer of the C. F. Burgess Laboratories, also of Madison. He was the engineer who made the investigation following which Ben Alexander and other capitalists of Wausau, Wis., bought an interest in the Masonite Corporation, with main offices now at Wausau and mills at Laurel, Miss.

James L. Jones

James L. Jones, paper manufacturer, first president and later Street Commissioner of the village of Eastwood, died at the home of a cousin, John D. Estes, on July 6. He was 81 years old. Mr. Jones was born in Rochester and was engaged with his father, William Jones, in manufacturing paper in Chittenango twenty years prior to moving to Eastwood in 1893.

He was one of the first chief engineers of the Pierce Butler Radiator Corporation. Mr. Jones also was a real estate broker for about ten years.

Surviving are two sons, Earl F. and Fred W. of Syracuse, and two sisters. Mrs. William R. Jones of Ithaca and Mrs. Stanton Marshall of Fenner.

Raymond Straus

Raymond I. Straus, 51, president of the American Paper Company of Richmond, Va., died of a heart attack yesterday.

After being associated for some time with the Bedford Pulp and Paper Company he became, about twenty years ago, the president of the American Paper Company here.

He was a member of the board of Beth Ahabah Synagogue. Surviving are his wife, Sophie G.; a son, Raymond I., Jr.; a brother, and a sister.

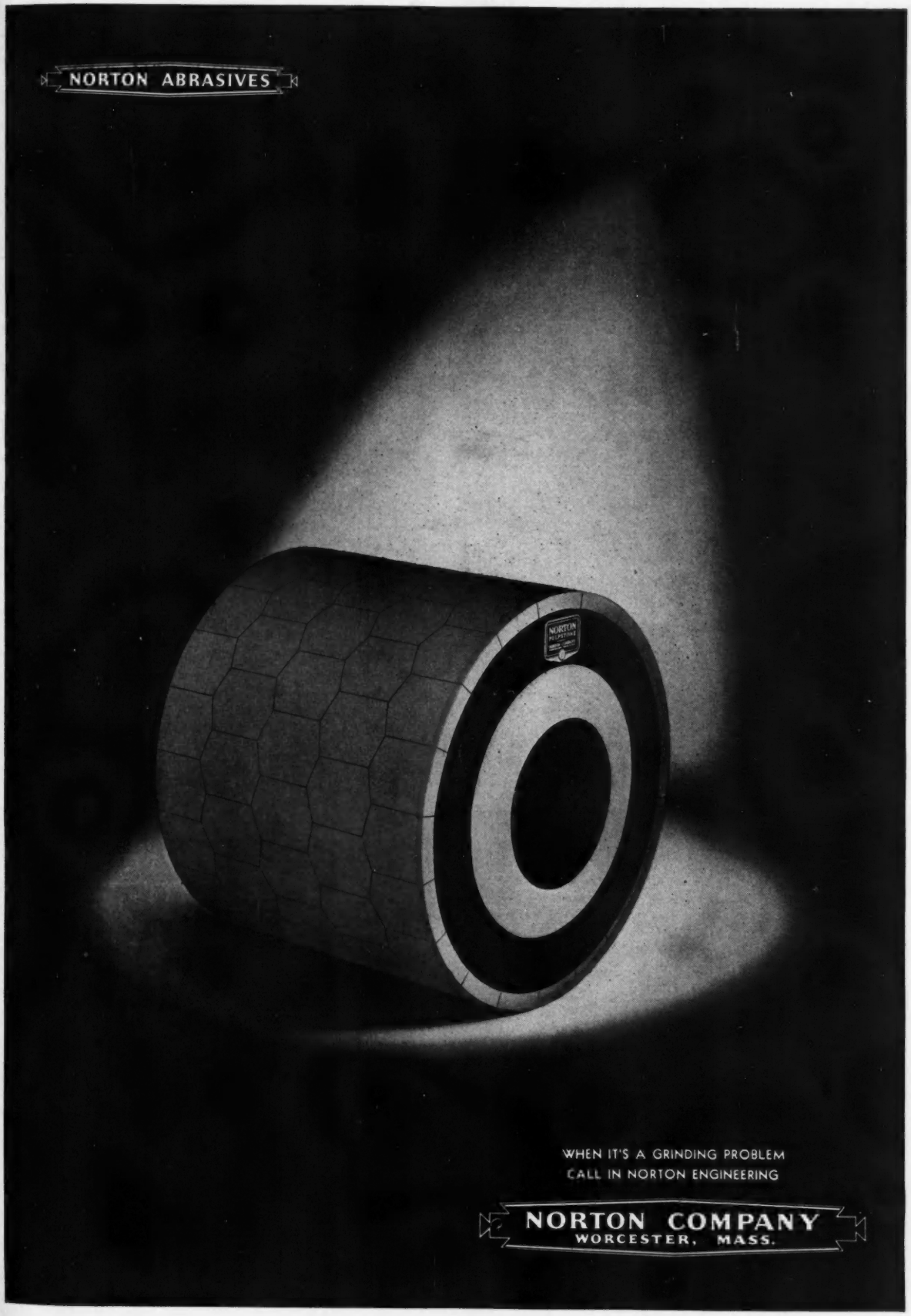
Watson Eastman

Watson Eastman, 74, founder and president of Western Cooperage company and Hawley Pulp and Paper company, died at 1 P.M. Saturday at his home, 2645 N. W. Beuhla Vista terrace. Mr. Eastman had been ill at home since February.

A native of New Sharon, Maine, Mr. Eastman moved to Vancouver, B. C., more than 60 years ago and founded the Vancouver Cooperage company.

Later in Los Angeles he founded a cooperage plant there with William Sullivan, and subsequently another in Aberdeen, Wash. Mr. Eastman came to Portland in 1906, and a year later opened the Western Cooperage Company of Oregon, now parent company to plants in Vancouver, B. C., Seattle, San Francisco, Fresno, Los Angeles and Victoria, B. C.

Mr. Eastman had been president of the Hawley Pulp and Paper company since December, 1932.


NORTON ABRASIVES
WHEN IT'S A GRINDING PROBLEM
CALL IN NORTON ENGINEERING
NORTON COMPANY
WORCESTER, MASS.

Mr. Eastman was a member of the Arlington club here and of the Elks lodge in Aberdeen.

Surviving are his wife, Gertrude Eastman, a son, William Eastman, and four grandchildren in Portland.

E. N. Whitaker

The Chicago and midwest paper industry lost a long time friend last week in the death of E. N. Whitaker, former manager of the western division of the American Paper Goods Company. Mr. Whitaker died at his home in a Chicago suburb on July 6 after a long illness. Funeral services, held on July 9, were widely attended by paper trade executives in this area. Mr. Whitaker is survived by his widow and one son, a resident of Mt. Vernon, Illinois. E. N. Whitaker began his career in the paper trade in 1897 with the Springfield, Massachusetts, firm, the Birnie Paper Company. He gained additional experience in the paper converting field and became affiliated with the American Paper Goods Company in 1916 and was identified with the Chicago offices since 1921. He was 65 years of age. Mr. Whitaker was widely known in the paper converting trade and his advice and counsel on this branch of the paper industry was often sought by his friends and associates in this area.

Carleton G. Eaton

Carleton G. Eaton, 44, of Chesterbrook road, Waltham, Mass., sales manager for the A. M. Eaton Paper Company, Waltham, died July 13 at his summer residence, Manomet, Mass.

Mr. Eaton was well and favorably known in the trade.

James E. Lee

James E. Lee, salesmanager for the W. Ralston Paper Company of Niagara Falls, N. Y., died July 15 of a heart attack in Chicago where he had gone on a business trip. Mr. Ralston was 64 years old and was born in Michigan. He had lived at Niagara Falls, N. Y., for two years. The body was returned to Niagara Falls.

Arthur S. Humphrey

SHAWANO, Wis., July 22, 1940—The death is announced of Arthur S. Humphrey, president of the Wolf River Paper and Fiber Company. He passed away Saturday night, July 13, at his home, and funeral services were held Tuesday, July 16. Mr. Humphrey was 50 years of age, and formerly was a banker at Shawano.

Ed E. Hanlon

Ed E. Hanlon, 50, of Coon Rapids, Ia., salesman for the Field Hamilton Smith Paper Company of Omaha, Neb., was found dead of a heart attack Tuesday noon in a hotel room in Ida Grove, Ia. Mr. Hanlon formerly resided in Omaha for a short time.

Patex Co. Incorporates

BOSTON, Mass., July 29, 1940.—The Patex Company, Boston, development of coating paper, has been incorporated with capital of 1000 shares of no par value. The incorporators are R. Gaynor Wellings, Ralph N. Thompson and Chauncey W. Hood.

Accident Rates in 1939

The National Safety Council has just issued its annual report on accidents in paper industry and gives the following as outstanding facts about 1939 experiences:

1. Paper and pulp mills averaged 15.17 for frequency and 1.72 for severity during 1939. Both injury rates were sharply above corresponding averages of 11.83 and 1.42 for all industries.

2. The outstanding feature in the industry's 1939 experience was the sharp rise in severity in comparison with 1938 — 41 per cent. There was no change in frequency. These results compare unfavorably with average reductions of five per cent in frequency and 10 per cent in severity for all industries.

3. Improvement in frequency since 1926 has amounted to 72 per cent against a reduction of 69 per cent by industry as a whole. Paper and pulp mills have also made a better showing in severity, achieving a reduction of 56 per cent in comparison with a general average drop of 50 per cent.

4. Large mills had the lowest 1939 frequency rates, averaging 14.27. Small organizations, as in the past, had the lowest severity rates, averaging 1.03. The large increase from 1938 in the industry's severity rate was primarily due to higher rates in large mills.

5. Serious injuries increased sharply in frequency and severity from 1938 to 1939.

6. Of the various branches of the industry, roofing mills had the lowest frequency rates, averaging 8.19. Manufacturers of paper goods had the lowest severity rates, averaging 0.44.

7. Only tissue, roofing, and newsprint mills lowered 1938 frequency rates. In severity, improvement was made only by wrapping mills—three per cent.

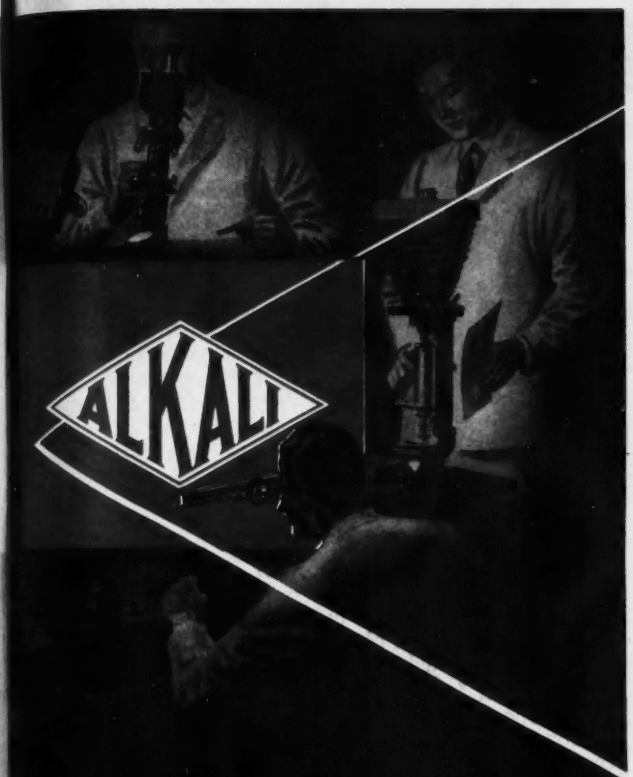
8. The principal unsafe act involved in 208 serious injuries occurring during the last three years was gripping, holding, lifting, or otherwise handling objects unsafely and assuming an unsafe position, such as standing under suspended loads.

9. The principal mechanical cause involved in 360 fatalities and permanent partial disabilities was hazardous procedure, such as unsafe processes, working methods, and poor housekeeping. The most important personal cause was disobedience of instructions and other improper attitudes on the part of employees.

10. The Hollingsworth & Whitney Company's mills at Waterville, Maine, hold the best all-time no-injury record of 3,343,623 man-hours. The record began March 20, 1935, and terminated June 7, 1936.

The 1939 experience of the industry is based on reports from 236 mills whose employees worked 206,304,000 man-hours during the year. The frequency rate of 15.17 is 28 per cent above the average for all industries. The severity rate of 1.72 is 21 per cent higher than the all-industries rate. Paper and pulp mills ranked 21st in frequency and 23rd in severity in a list of 30 major industries.

The rise of 41 per cent in the severity rate was one of the sharpest increases in any industry. Paper and pulp mills, on the other hand, were successful in maintaining their frequency rate at the lowest level since 1926. Progress in both rates during the last 13 years has exceeded the averages for all industries.



1
Controlled
MANUFACTURE

2
Scheduled
DELIVERIES

3
Guaranteed
PURITY

Accurately Controlled Manufacture makes...
DIAMOND ALKALIES *Better!*

A KEY factor in making DIAMOND Alkalies your best selection is the precise control we exercise over the product during manufacture. Checks and tests at every step of the process make *absolutely certain* that there is no variation from proven Diamond Formulae.

To accomplish this objective, we employ the finest research laboratory technique and equipment—for only by such means are we able to obtain the *degree* of control we demand. And you are the winner—because Diamond's controlled manufacture means that you get exactly *what* you want *when* you want it!

A Diamond Engineer will be glad to show you specifically how Diamond's Three-fold Protection for Users of Alkalies will make your problems easier!

DIAMOND'S
3 *Fold Protection*
for the **USERS** *of* **ALKALIES**

DIAMOND ALKALI COMPANY
Pittsburgh, Pa., *and Everywhere*

CONSTRUCTION NEWS

Detroit, Mich.—The Detroit Wax Paper Company, 1721 West Pleasant street, River Rouge, Detroit, manufacturer of waxed and other processed paper stocks, has approved plans for new addition to mill, consisting of a one-story structure, reported to cost close to $60,000, with equipment. Contract for general erection has been let to the C. A. Handeyside Construction Company, General Motors Building, Detroit, and work will be placed under way at once.

Chicago, Ill.—The Fort Wayne Corrugated Paper Company, 2400 West Madison street, manufacturer of straw paper for corrugating service and other stocks, has arranged for purchase of property at South Kolin avenue and West Forth-fifth street, 235 x 300 feet, to be used as site for proposed new plant, recently referred to in these columns. Company also has taken option to purchase an adjoining tract on West Forty-fifth street, 160 x 278 feet, to be used for future expansion. New plant will occupy practically the entire plot of land acquired, consisting of a one-story unit, 220 x 300 feet, to be equipped for large capacity. It is reported to cost close to $200,000, with equipment. Erection is being placed under way by the Poiret Construction Company, 2001 West Pershing road, which recently secured the construction contract, and is scheduled for completion in the fall. A. Epstein, last noted address, is consulting engineer. Main offices of company are at Fort Wayne, Ind.

New York, N. Y.—The National Gypsum Company, East River and East 150th. street, Bronx, has production under way at new board mill at local plant, in course of construction for several months past, and the unit is now developing larger output in this line than any other mill of the company. The plant is running on a five-day week basis and will continue on such schedule for an indefinite period. Main offices of company are at 190 Delaware avenue, Buffalo, N. Y.

New York, N. Y.—The H. & H. Envelope Company, 448 Ninth avenue, commercial envelopes and kindred paper products, has leased space in building at 521 Eighth avenue and will occupy for local converting plant.

Lennoxville, Que.—The Philip Carey Company, Ltd., manufacturer of asbestos paper products, mill board, etc., plans new addition to mill, to be one-story, estimated to cost over $60,000, with equipment. Proposed to begin work soon.

Thorold, Ont.—The Beaver Wood Fibre Company, Ltd., manufacturer of pulp board, chip board, newsprint, etc., has awarded general contract to R. Timms Construction Company, Ltd., 221 Burgar street, Welland, Ont., for one-story addition to mill on Allanburg road. Cost reported close to $75,000, with equipment. Work is scheduled to begin at once.

Boston, Mass.—Tileston & Hollingsworth Company, 213 Congress street, manufacturer of writing, book and kindred paper stocks, has taken out a permit for improvements in local mill at 892 River street. No estimate of cost has been announced. Work will be carried out at once.

Waterbury, Conn.—The Waterbury Corrugated Container Company, Mill street, manufacturer of corrugated boxes and containers, has filed notice of issuance of additional shares of capital stock, totaling $11,500, the proceeds to be used for general operations.

Mobile, Ala.—The Southern Kraft Corporation, manufacturer of kraft paper stocks, has begun the installation of new pipe line system for water supply at local mill, consisting of about 25,000 lineal feet of "shatter mains", a joint product of the National Tube Company, Pittsburgh, Pa., steel pipe and tubing, and Hill, Hubbell & Co., Cleveland, Ohio, a division of the General Paint Corporation. Work on the improvement will be carried out during the summer. Company is a subsidiary of the International Paper Company, New York, N. Y.

Milwaukee, Wis.—The Safety Envelope Manufacturing Company, manufacturer of commercial envelopes and kindred paper products, has taken out a permit to occupy building at 1023 North Water street for local plant, and immediate operations will be carried out.

Newton, N. J.—The Campbell Company, Hicks avenue, special paper products, has awarded general contract to William I. Houghton, Newton, for proposed new addition to mill on Merriam avenue, previously referred to in these columns, to be one and two-story and basement, reported to cost close to $80,000, with equipment. Erection will be placed under way at once. New structure will be used for the production of processed photographic paper stocks, including sensitizing and other manufacturing divisions.

Columbia, S. C.—The Cayce Paper Stock Company, Blossom street, plans rebuilding of portion of storage and distributing plant, recently damaged by fire, with loss reported close to $15,000, including equipment.

Merritton, Ont.—The Alliance Paper Mills, Ltd., manufacturer of writing and kindred paper, box board, insulating board, etc., has engaged J. E. Walker and John G. Elliot, 47 Wellington street, East, Toronto, Ont., architects, to prepare plans for proposed new addition to mill, recently noted in these columns. It will be one-story, 50 x 145 feet, reported to cost close to $60,000, including equipment. Contract for erection is scheduled to be awarded at early date.

Hempstead, Tex.—The Texas Gypsum Mining and Construction Company, recently organized, has taken out a charter of incorporation under New York State laws, and has established offices in the Bankers' Mortgage Building, Houston, Tex., and will handle details of its proposed new fiber board mill from latter headquarters. As previously noted in these columns, company is securing tract of land in vicinity of Hempstead for new mill, consisting of several one-story struc-

Langston

SLITTERS & ROLL WINDERS

CORRECT DESIGN and construction have contributed to the outstanding performance and long life of Langston machines over the past 37 years.

Maintenance costs are quite low on Langston Slitters and Roll Winders because they are built soundly from bed-plate up. In mill, finishing room, converting plant they are making firm, true, clean rolls from all grades of paper and board. There is a type and size to meet your need.

1. Driven pressure or rider roll mounted in roller bearings with ball thrust bearings.
2. Nitrided steel gears provide glass hard surface with tough center. Unequalled for wear and strength.
3. Drums mounted in roller bearings with ball thrust bearings.
4. "Shear Cut" combining power driven back cutter and frictionally driven front cutter, driven cutter shaft mounted in roller bearings with ball thrust bearings.
5. Heavy bedplate cross-ties side frames and carries drives.
6. Pressure roll driven through spiral bevel and spur gears made from nitrided steel, running in oil, entire drive being fully enclosed.
7. Vertical shaft driving pressure roll has two keyways for sliding drive gear, and is mounted in Timken Bearings with provision for taking up end thrust.
8. Vari-speed Clutch Pulley provides great flexibility both in starting and operating.

NOTE: Any desirable form of drive can be provided to suit individual plant.

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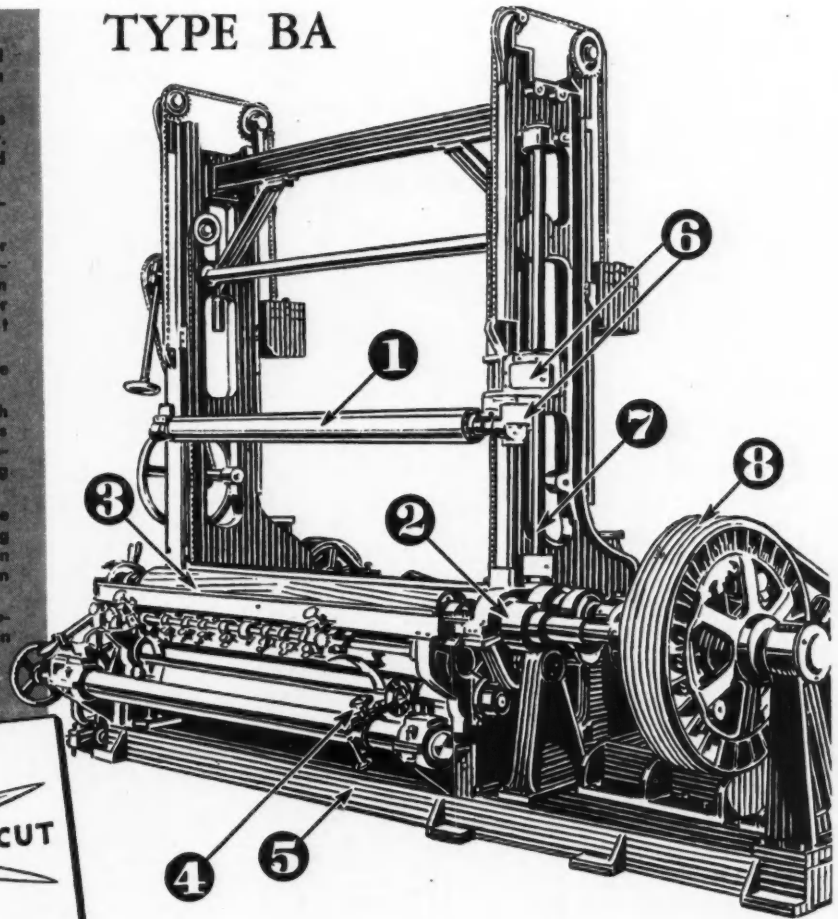
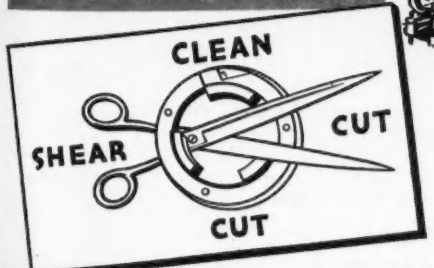




SAMUEL M. LANGSTON COMPANY, *Camden, N.J.*

tures, equipped for a capacity of about 100 tons of finished fiber board products per day. The plant will operate under a new production process. Company also will develop and operate gypsum mining properties in the same area, with initial plant reported to cost approximately $100,000, with equipment, and will carry out large production for raw material requirements for mill. Construction is scheduled to begin at early date. Charles A. Howe is president.

Chicago, Ill.—The Fort Wayne Corrugated Paper Company, 2400 West Madison street, manufacturer of straw paper for corrugating service, has approved plans for new local mill at 45 West Kolin avenue, consisting of a one-story structure, 220 x 300 feet, estimated to cost close to $200,000, with equipment. General erection contract has been let to the Poirot Construction Company, 2001 West Pershing road, Chicago, and work is scheduled to begin at once. A. Epstein, last noted address, is consulting engineer. Main offices of company are at Fort Wayne, Ind.

Tomahawk, Wis.—The Tomahawk Kraft Paper Company, manufacturer of kraft paper stocks, has approved plans for new addition to mill. It will be one-story, reported to cost in excess of $60,000, with equipment. Erection contract has been let to C. R. Meyer & Sons Company, 50 State street, Oshkosh, Wis., and work will proceed at early date.

New Companies

Green Bay, Wis. — The Steen-Macek Paper Company, Inc., has been organized to manufacture and deal in paper products. B. C. Steen, Green Bay, is one of principal incorporators and will head company.

Boston, Mass.—The Patex Company, 154 Pearl street, has been incorporated with capital of 1000 shares of stock, no par value, to manufacturer coated paper products, and develop processes for coating. R. Gaynor Wellings, Ames Building, Boston, is president; Ralph N. Thompson, Melrose, Mass., is treasurer.

Will Not Allow Runaway Prices

WASHINGTON, D. C., July 30, 1940—President Roosevelt at a press conference this afternoon stated that officials of the National Defense Advisory Commission have met with 17 of the major pulp and paper producers of the country relative to the paper and pulp situation.

The Chief Executive stated that the industry has given assurances that they will not allow run away prices. He said that Edward R. Stettinius, Jr., head of the raw materials division and Leon Henderson in charge of prices had attended the conference.

Mr. Roosevelt said that it developed at the conference that there is no pulp shortage and no immediate prospect of a shortage. He said that pulp exports from the U. S. are decreasing and that Canadian pulp exports to this country are increasing.

The President stated that the defense officials were offered the hearty cooperation of the pulp and paper industry. He said that the industry has promised that prices will not spiral and that a satisfactory agreement had been reached which should allay the fears of paper and pulp consumers.

I. P. Makes Wage Agreement

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., July 29, 1940.—Announcement is made here that a new wage agreement has been decided following a conference between officials of the International Paper Company and representatives of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers. The new wage agreement replaces the one which expired last spring and provides for a general increase of two cents an hour. In some departments, an adjustment was made which gives an additional increase of two cents per hour. Action on the request for vacations with pay was deferred until later. The agreement is retroactive to June 1 and employees therefore will be paid the difference in the two rates from that date. Signing the agreement for the labor groups were John P. Burke, president of the International Brotherhood of Pulp, Sulphite and Paper Mills Workers; Arthur Huggins, president of the International Brotherhood of Papermakers, and John McNamara, president of the International Brotherhood of Firemen and Oilers. Managers of the various mills in the book and bond division of the company also signed the agreement. Representing the paper concern at the meeting were Stuart E. Kay, vice president, and C. E. Youngchild, general manager of the book and bond division. Delegates attending the conference were from the branch mills at Palmer, Ticonderoga, Fort Edward, Niagara Falls, Tonawanda, Livermore Falls, and Orono, Me.

Government Paper Bids and Awards

WASHINGTON, D. C., July 31, 1940—Government Printing Office has received the following bids for 5,000 sheets of 24 x 36 brown cloth lined paper; Graham Paper Company, $12.00 per M sheets; Barton, Duer & Koch Paper Company, $115.00; Nashua Gummed & Coated Paper Company, $126.67 less 2 per cent; Mudge Paper Company, $114.69; Whitaker Paper Company, $114.23; and Middlesex Products Company, $117.00.

For 7,200 pounds of 22 x 34 yellow sulphite manifold paper and 9,750 pounds 21 x 32 green same; Import Paper Company, 8.75 cents; Barton, Duer & Koch Paper Company, 10.82 cents; Cauthorne Paper Company, 9.1 cents; and Whitaker Paper Company, 10.87 cents.

Whitaker Paper Company has been awarded the contract for furnishing the Printing Office with 2,910 pounds (15,000 sheets) of 21 x 32½ buff sulphite index paper at 2.8 cents, bids for which were received on July 1.

Samuel Gove Joins Stimpson & Co.

BOSTON, Mass., July 29, 1940.—Samuel Gove, formerly for 16 years with Stimpson & Company, Inc., as salesman, has become associated by Dee & Anderson in a similar capacity, covering the New England territory with Mr. Anderson. Mr. Gove is very well known in the trade, having been a paper salesman for 26 years. His firm is New England representative for the Forster Manufacturing Company, Inc., Strong, Me.; Harvey Paper Products Company, Sturgis, Mich., and the Crescent Plate & Tray Company, Chicago, Ill.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending July 31, 1940

	High	Low	Last
A. P. W.	....	....	....
Armstrong Cork Co.	30½	28¼	30½
Celotex Corp.	6½	6¼	6½
Celotex Corp., pf.	53	53	53
Certain-Teed Products Corp.	4⅛	4⅛	4⅛
Certain-Teed Products Corp., pf.	22⅝	22	22½
Champion Paper & Fibre Co.	22⅞	22	22⅞
Champion Paper & Fibre Co., pf.	101	100	100
Congoleum-Nairn Co.	17½	17	17
Container Corp. of America	14¾	13¾	14
Continental-Diamond Fibre Co.	6	5¾	6
Crown-Zellerbach Co.	15⅜	14⅛	15⅜
Crown-Zellerbach Co., pf.	88	87	87½
Flintkote Co.	14⅜	12⅝	14⅜
Robert Gair	2¾	2½	2¾
Robert Gair, pf.	11⅛	11⅛	11⅛
International Paper & Power	14¼	11¾	14⅛
International Paper & Power, pf.	53	46⅜	52¼
Johns-Manville Corp.	58½	56	57⅜
Johns-Manville Corp., pf.	127½	127½	127½
Kimberly Clark Corp.	....	....	....
MacAndrews & Forbes	28	27¾	28
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	27¼	25	26¾
Mead Corp.	9¼	8⅝	9¼
Mead Corp., pf.	79	78	78
Paraffine Companies, Inc.	31	30⅝	30⅝
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	17⅛	15	17⅛
Rayonier, Inc., pf.	30⅛	28⅞	30
Ruberoid Co.	14½	14½	14½
Scott Paper Co.	39¾	39	39¾
Scott Paper Co., pf.	114	114	114
Sutherland Paper Co.	24½	24½	24½
Union Bag & Paper Corp.	12⅛	10⅜	11⅞
United Paperboard Co.	3⅞	3¾	3⅞
U. S. Gypsum Co.	65¼	60⅜	65
U. S. Gypsum Co., pf.	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending July 31, 1940

	High	Low	Last
American Box Board Co.	4¼	4¼	4¼
Brown Co., pf.	17	17	17
Great Northern Paper	42¼	42	42
National Container Corp.	11	9⅞	11
St. Regis Paper Co.	2⅜	2¼	2⅜
St. Regis Paper Co., pf.	59	56	59
Taggart Corp.	3⅛	2⅞	3⅛

Crown Zellerbach Makes Largest Net

Crown Zellerbach Corporation in its sixteenth annaual report to stockholders shows consolidated net profit for its fiscal year ended April 30, 1940, of $8,119,494, after all charges, equal after preferred dividend requirements, to $2.42 a share on the outstanding stock. This is the largest net profit ever reported by the corporation and compares with $5,015,390, or $1.04 a common share, for the preceding fiscal year.

The company's production and sales for the fiscal year ended April 30, 1940, also established new high records. Production of all products manufactured for sale totaled 617,316 tons, as against 491,600 tons for the preceding fiscal year. Consolidated net sales amounted to $56,526,576, as compared with $48,339,601 for the preceding year.

The report, issued jointly by Louis Bloch, chairman of the board, and J. D. Zellerbach, president, attributes the improvement in Crown Zellerbach's results to improvement in general domestic business conditions together with the effect which the discontinuance of pulp and paper shipments from Europe had on production of these products in North America.

Financial position at the close of the year was the most satisfactory on record with current assets totaling $25,721,288 and current liabilities $8,018,406, ratio of 3.21 to 1. Cash amounted to $3,948,848 at April 30, 1940, compared with $3,748,158 a year earlier.

Net working capital totaled $17,702,882 as against $15,770,341 at April 30, 1939. The company's accounts as of April 30, 1940, gave effect to adjustments covering the conversion of the net current assets of its Canadian subsidiaries, Pacific Mills, Ltd., and the Hudson Paper Company, Ltd., wholly owned subsidiary of Pacific Mills, Ltd., to the equivalent in United States dollars. These adjustments were absorbed in consolidated earnings for the year.

Fraser Companies Profits Up

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 29, 1940—Fraser Companies, Limited, of Edmundston, N. B., report that for the quarter ending June 30 there was an improvement of $560,885 in consolidated net profit, after depletion and depreciation for before provision for income taxes, as compared with a year ago. Net in the second quarter of this year was $376,349, which compares with a deficit of $184,536 in the like 1939 quarter.

This brought net profit, after depreciation but before income taxes, for the first half of the year to $473,245, being an improvement of $920,784 over the like period of 1939, when a deficit of $447,539 was shown.

In commenting on the sharp increase in profits the company emphasizes that a substantial amount will be required for Dominion, provincial and United States income taxes, for which no provision is shown in the foregoing figures. It is also stressed that the interim statement to June 30 shows provision for depreciation at substantially the same amount as a year ago, while it is probable that the rate of depreciation for the entire year will have to be increased to compensate for the increased rate of operations.

Whitaker Paper Declares Dividends

The Whitaker Paper Company reports net income for the first half of 1940 of $119,039 after all taxes, equal to $3.01 a common share. This compared with earnings of $70,734 or $1.41 a share in the same period last year. Total assets on June 30, 1940, amounted to $4,425,459 against $4,435,582 the year previous. Directors of the company declared the regular quarterly dividend of $1.75 a share on the preferred stock payable October 1 to stockholders of record Sept. 1. They also declared a dividend of $1 a share on the common payable the same date.

Robert Gair Reports $437,905

Robert Gair Company, Inc., and United States subsidiaries report for the six months ended June 30, 1940, profit after depreciation, interest and dividends of subsidiary company, and provision for federal income tax but before interest on income notes, of $437,905.03.

Gair Company Canada Limited, wholly owned sub-

sidiary of Robert Gair Company, Inc., reports for the six months ended June 30, 1940, profit, after $186,500 provision for Dominion and Provincial income taxes and Dominion excess profit tax, of $99,311.98 in Canadian dollars.

Due to the discount on exchange of Canadian dollars into United States currency, issue of a consolidated statement of earnings is impracticable and no comparison with the corresponding period of the previous year is available.

Consolidated Nets $1,061,663

[FROM OUR REGULAR CORRESPONDENT]

WISCONSIN RAPIDS, Wis., July 29, 1940 — Net earnings of the Consolidated Water Power and Paper Company for the first six months of 1940 were $1,061,663.07, almost doubling the net of $574,958.22 for the same period of 1939, according to a report submitted to stockholders at the annual meeting Wednesday, July 24, at the company's offices. Earnings for the last half of 1939 were $957,024.06.

Directors and officers were reelected as follows: George W. Mead, president; Stanton W. Mead, vice-president, treasurer and director of manufacturing; Walter L. Mead, vice-president and director of sales; E. B. Redford, secretary, and Ralph R. Cole, comptroller, a newly created officer. Theodore W. Brazeau is also a member of the board.

Hinde & Dauch Report $274,096

The Hinde & Dauch Paper Company and subsidiaries, report for the quarter ended June 30, net income $274,096 after taxes and charges, equal after preferred dividends to 64 cents a share on 360,250 common shares, compared with $171,358, equal to 35 cents a share a year ago and $208,223, equal to 45 cents a share in quarter ended March 31; six months ended June 30, $482,319, equal to $1.09 a share, year ago $323,933 and 65 cents a share.

Sutherland Earns $437,525

The Sutherland Paper Company reports for six months ended June 30, a net profit of $437,525, equal to $1.52 a share of common stock, comparing with $258,919, or 90 cents a share in first half of 1939.

For 12 months ended June 30, net profit was $901,796, or $3.14 a share, against $452,560, or $1.57 a share, for 12 months ended June 30, 1939.

Bartgis Bros. Make Good Report

The Bartgis Brothers Company, Ilchester, Md., according to F. W. Bitz, secretary and assistant treasurer of the company, made a profit before taxes of $4,895.74 for the month of June, 1940, which compares with $7,737.70 for the month of June, 1939. The company made a profit before taxes of $55,417.99 for the six months period ending June 30, 1940, as compared with a profit of $54,882.33 for the six months period ending June 30, 1939.

Dixie-Vortex Reports $825,007

The Dixie-Vortex Company reports for the twelve months ended June 30, net income of $825,007, equal after class A common dividends to $1.87 a share on common stock, compared with $819,978, equal to $1.84 a common share in same period a year ago.

New Zealand Buys American Greaseproof

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 24, 1940—As a result of the spread of hostilities to Scandinavia, there appears to be an opportunity for the sale of American greaseproof paper in New Zealand. The most important non-British sources of supply for this type of paper have been Sweden, Germany, Norway and Finland. It is understood that American greaseproof paper has not been able to compete in New Zealand in the past because of its higher price, but the United States seems to be the principal source of supply now available.

Several New Zealand firms are stated to possess licenses for the importation of greaseproof paper from the Scandinavian countries and, in at least one case, such a license has been transferred to provide for the importation of such paper from the United States. The firm states it recently placed a sizeable order for American greaseproof paper through the medium of a Melbourne agent, and adds that it has since been approached by two New Zealand firms which apparently have agencies for American mills.

Crown Zellerbach Refund Loans

The Crown Zellerbach Corporation has refunded $12,000,000 of bank loans, reducing average interest charges from 3.3 per cent to 2.07 per cent. A premium of $163,000 was paid on pre-payment of old loans.

The long-term debt of the company now totals $13,100,000, maturing $2,700,000 in the fiscal year ending June 30, 1942, $2,400,000 in the next year and $2,000,000 a year for the next four years.

Sutherland Profits Higher

The Sutherland Paper Company for the six months to June 30 reports a net profit of $437,525, equal to $1.52 each on 287,000 shares of common stock, compared with $258,919, or 90 cents a share, last year. Twelve months to June 30: Net profit, $901,796, or $3.14 a share, against $452,560, or $1.57 a share, for the twelve months to June 30, 1939.

Puget Sound Earns $618,143

The Puget Sound Pulp and Timber Company for the six months to June 30, reports a net profit of $618,143, equal after preferred dividend requirements to $1.81 each on 319,562 common shares, contrasted with net loss last year of $14,821.

Eddy Paper Corp. Reports Profit

The Eddy Paper Corporation reports for the six months to June 30; net profit $205,633, equal to $1.11 each on 185,045 shares of capital stock, compared with $62,851, or 34 cents each on 185,048 shares last year.

Keyes Fibre Earns $120,246

The Keyes Fibre Company for the six months to June 30 reports a net income of $120,246, against $92,327 earned last year.

Indianapolis Slow

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., July 29, 1940—A mid-summer slump appears to have hit the local paper market, according to jobbers, but they contend there is nothing apparent yet to cause alarm. Extremely hot temperatures during the last week were not conducive to business and this coupled with the fact that so many persons are entirely out of the state on vacations also served to hamper the demand. Many buyers, anticipating the vacation period, bought a month ago and there will be no activity from them until a more pressing need arises.

All prices are being held firmly at the new highs and there is no indication of a decline. However, the local market shows anything but run-away tendencies. Demand for kraft appears to be good and this particular item seemed to hold its popularity last week while others slumped in demand.

The fine paper demand is none too satisfactory. Books, covers, bonds and ledgers are having some sale, but the activity is not what it might be. Prices are being held well, however.

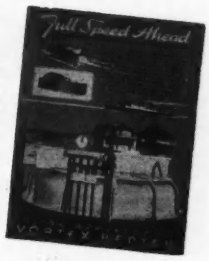
Building papers continue to dominate the market demand. Construction is heavier in most central Indiana cities than it was this time a year ago and dealers are buying current needs. Jobbers are predicting a much better volume than last year and believe the demand will hold up until weather conditions stop outside construction. Prices are firm, but every effort is being made to hold them within reasonable bounds in order not to put a further burden on the building industry.

Container factories are working virtually at capacity and report a continued demand. Not only is the consumer base wider that it was a year ago, but the individual buyers apparently are busier. It was reported last week however, that orders were not as brisk as they had been, but it is likely there will be no immediate change in production schedules.

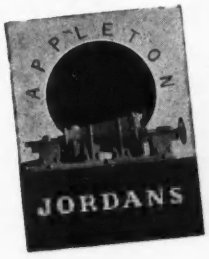
Paper stock executives say the waste paper market is firm, but the demand from mills is not so good. No important price changes were reproted. Only a fair demand was seen for rags with prices unchanged to strong.

FASTER BEATING
***with the* Appleton Vortex Beater**

The powerful, rapid action of the Appleton Vortex Beater greatly reduces beating time. Lap pulp is disintegrated as fast as it can be furnished. When the stator is lowered hydration begins. Fast loading, rapid cycling, thorough beating and mixing, high production, quick dumping—with the Appleton Vortex Beater stock is prepared in less time, with less power, in half the space and at lower cost.



UNIFORM REFINING
***with the* Appleton Jordan Engine**



Here is a sturdy, dependable Jordan that does its work quickly and thoroughly. Appleton Jordans assure uniform brushing and refining for every requirement in the modern paper industry. There is a size for every production demand on any kind of stock. Even under severe service conditions they give superior performance and accurate control. Close-coupled motors are an exclusive feature.

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The above folders give detailed information on this modern paper making equipment. Any one, or all, sent to you on request.

Survey Waste Paper Supply

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 31, 1940—Forest Products Division of the Department of Commerce is making a survey of waste paper supply and use for the National Defense Advisory Commission.

In view of a possible shortage of certain types of wood pulp, this survey is aimed to determine (1) the additional quantities of highgrade waste paper available in the United States; and (2) the extent to which paper manufacturers can use additional quantities of waste paper in place of wood pulp, particularly sulphite.

The Forest Products Division has carried on this survey by telephone and personal interviews held throughout the country with executives of 168 paper mills representing 55 per cent of the United States chemical pulp consumption. The Division also contacted 5 of the large Eastern waste paper collectors.

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

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COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Olympic Hotel, Seattle, Wash., August 20-23.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Stevens Hotel, Chicago, Ill. October 7-11.

NATIONAL PAPER TRADE ASSOCIATION, annual Fall Meeting, Stevens Hotel, Chicago, Ill. September 23-25.

BUSINESS OUTLOOK

Production of paper continues at a high level at 92.9 per cent for the week ended July 20, and the business situation is favorable for the near future. The principal factors in the general outlook according to the July 22 issue of *The Guaranty Survey*, published by the Guaranty Trust Company of New York, is "an adverse factor of major importance caused by the progressive disappearance of foreign markets with the extension of the European conflict into new areas. Norway, Denmark, The Netherlands, Belgium, Luxembourg, Italy, France, and indirectly a number of other countries either have been definitely eliminated as markets or have been placed in a position where their ability to important American farm products is highly uncertain. Most of this has taken place too recently to be clearly reflected in the current figures. When the full effects do appear, they are likely to be drastic. To a limited extent, the total or partial closing of these foreign markets may be offset by greater demand on the part of Great Britain as other sources of supply are cut off."

In commenting on armament orders and the national defense program on business, the *Survey* says in part: "Under the spur of armament orders and the expected stimulus of the national defense program, business activity has continued to follow an upward course in recent weeks. The general level last month was moderately higher than in May, although the rate of advance was apparently slower in the second half of the month than in the first. Reports for the early part of July indicate a rather sharp recession, but the significance of this movement is doubtful in view of the strong holiday influence. It is recognized, of course, that one of the effects of recent developments in Europe will be shut off or curtail a number of very important foreign markets for American commodities and to close sources of supply for raw materials and finished products. Thus far, however, this adverse influence has not had time to make its consequences fully apparent and has been overshadowed as an immediate business factor by the expansion of foreign and domestic demand."

In commenting on the influence of the national defense program the *Survey* states that "as far as tangible results are concerned, the defense program also is a prospective influence rather than an actual one: no effects of major importance are expected for several months. Nevertheless, the confident expectation that such results will appear seem to be a strong factor underlying the more aggressive buying policies that have been adopted in some branches of business as the tremendous scope of the armament plans has become apparent. Preparations for defense have continued to make swift progress. The President has approved bills intended to expedite army expansion and naval shipbuilding, together with a measure carrying supplemental appropriations and contract authorizations of $1,763,000,000 for the army and navy, a bill providing for export licenses for strategic armament materials, a measure broadening the power of the Reconstruction Finance Corporation to finance the importation and production of commodities essential to defense, and a revenue bill to increase taxes and raise the limit on the national debt."

The gradual downward movement in commodity prices at wholesale was broken in the first week of July by a moderate advance, the first since the middle of May. The latest index of the Bureau of Labor Statistics was 77.5 per cent of the 1926 average, compared with 74.6 per cent on August 19, 1939. The current index is only a fractional point below the level on April 1. Other favorable reports are found in the recovery in manufacturing industry which began in May, according to the Department of Commerce. New orders received rose nearly 10 per cent from the April level and reached the highest figure since November, 1939. Shipments increased about 2.5 per cent and as the volume of shipments was smaller than that of incoming business, unfilled orders rose 3.4 per cent, showing the first appreciable increase so far this year. The value of inventories was unchanged, a development that is considered significant as indicating that the tendency toward inventory liquidation, first apparent in March and intensified in April, was halted in May.

Another favorable business factor is found in the figures on employment for June which showed an increase of 900,000 workers over last year, the index

for June was 99.7, compared with 93.4 last year. Unemployment in the United States declined 3.8 per cent in May, according to the early estimate of the National Industrial conference Board and totaled 8,624,000, compared with 8,966,000 in April and 9,382,000 last year. The principal factor in the decrease was attributed to a seasonal rise in agricultural employment, supplemented by increases in trade, distribution and finance and in transportation, together with minor gains in other groups. The only decrease was the usual seasonal recession in employment in the manufacturing industries.

The favorable current business outlook would be much improved, however, if the Administration would remove obstacles tending to block industrial initiative and retard productive effort. In a message to members of the Chamber of Commerce of the United States, James S. Kemper, president of the chamber, pledged business to do its part in meeting defense needs. At the same time, Mr. Kemper advocated business deterrents imposed by the government, saying in part: "The present Congress has voted the largest appropriations ever made when this country was at peace. A substantial part of these appropriations is for national defense. National defense in terms of material and equipment, best can be assured by approaching the situation calmly and realistically, with a full appreciation that the job should not be magnified through hysterical fear. Recognizing the heavy burdens of taxation confronting the country's taxpayers, congress should take immediate steps to eliminate unnecessary public expenditures. Eliminate recent handicaps to the production of essential armament materials on an economical basis; and remove obstacles which tend to block industrial initiative and retard productive effort. Business is ready and willing to do its part in meeting any national problem. Congress and the government's administrative agencies can facilitate the progress of the preparedness program. The time to do it is now."

To Build Pulp Mill in North Manchuria

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 31, 1940—Plans for a Japanese wood pulp mill are reported to be underway. This mill will be located in Heiho in North Manchuria, according to a report from the Consulate General, Shanghai. It will be capitalized at 60 million Manchurian yuan, and will have a capacity of 120,000 tons per year. It is also reported two Japanese paper companies will establish a mill at Woosung near Shanghai, using the former site of a Chinese paper mill. The new plant will be capitalized at 2,000,000 yen.

Another mill has been planned by Japanese interests to be erected at Nanking. New paper mills recently commenced operating at Tsinan Shantung and at Mukden, Manchuria.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1940	1939	1938	1937	1936	1935	1934
January	90.2%	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	86.2%	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	83.9%	84.0%	69.6%	90.3%	76.0%	70.5%	.....
April	86.3%	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	91.7%	80.2%	69.0%	90.6%	81.6%	69.4%	.....
June	94.7%	79.7%	66.0%	87.3%	80.7%	72.3%	.....
July	.....	75.2%	72.0%	81.8%	77.3%	64.9%	.....
August	.....	82.9%	77.2%	82.9%	81.5%	70.9%	.....
September	.....	88.7%	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	96.6%	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	97.2%	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	91.1%	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average	.....	84.9%	72.3%	80.6%	81.3%	70.5%	.....
First 29 weeks	88.6%	80.3%	67.9%	89.1%	78.7%	68.9%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1940		CORRESPONDING WEEKS, 1939	
June 15	94.7%	June 17	79.0%
June 22	95.9%	June 24	79.2%
June 29	94.0%	July 1	81.2%
July 6...(Holiday week)	70.8%	July 8	56.3%
July 13	92.5%	July 15	81.8%
*July 20	92.9%	July 22	81.1%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	June 15, 1940	June 22, 1940	June 29, 1940	July 6, 1940	July 13, 1940	July 20, 1940
0% to 50%	38	38	28	102	31	30
51% to 100%	248	249	257	184	243	199
Total Mills Reporting	286	287	285	286	274	229

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	69%	64%	67%	63%
1940	71%	70%	69%	70%	76%	79%	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%
1939	72%	74%	84%	81%	71%	70%
1940	....	....	....	....	....	....

Week end. June 15, 1940—79%
Week end. June 22, 1940—79%
Week end. June 29, 1940—80%
Week end. July 6, 1940—60%
Week end. July 13, 1940—72%
Week end. July 20, 1940—77%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

* Preliminary figure.

Brown Co. Committee Urges Plan Assents

PORTLAND, July 29, 1940.—Reorganization committee managers for the Brown Company, $40,000,000 pulp and paper products company, reported last week that assents to a recently submitted plan had been received from more than 44 per cent of the preferred stockholders.

The committee reminded security holders that to make the plan effective assents were required from 66 2/3 per cent of the bondholders and a majority of the preferred stockholders.

Fox River Installs New Screens

Installation of new screens has been completed on machines of the Telulah mill of the Fox River Paper Corporation, Appleton, Wis. Other minor equipment replacements have been made. Parts of the mill also are being repainted.

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Makers are using

R·C·I *Synthetic* RESINS

Greater water resistance and greater adhesion are some of the other advantages of substituting resin for paraffin in wax-treating paper.

Synthetic resins are also being extensively used in the paper industry to achieve clearer, paler overprint varnishes and lacquers and more efficient coatings.

Inquiries are invited concerning the use of Reichhold synthetic resins in the paper industry.

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Routine Determination of Bacterial Content of Paperboard*

By L. C. Cartwright[1] and S. S. Epstein[2]

Abstract

A method of sampling, equipment and procedure for pulping the sample, and three methods of plating, in the routine determination of bacterial content of paperboard are discussed. The method of sampling eliminates the need for sterile containers or special aseptic technique. The pulping apparatus consists of a twin-propeller electric mixer with a special stainless steel pulping churn, a sampling hole being provided in the cover of the churn. The plating methods are: 1, 0.05 g. of sample plated in each of 10 regular Petri dishes with double strength standard nutrient agar; 2, 0.1 g. of sample plated in one large Petri dish with standard nutrient agar; 3, 0.1 g. of sample plated in one large Petri dish with standard nutrient agar containing 2 per cent agar-agar. Results are reported by Methods 1 and 2 on a total of 56 samples, and on 37 of these samples results by Method 3 are reported. Method 1 gave most reliable results. Method 3 gave slightly lower results, while Method 2 gave considerably lower results and yielded much difficulty due to spreader colony formation.

Present and pending regulations on the sanitary quality of paperboard used in food containers render important to the converter routine bacteriological examination of paperboard as received from the mills and of finished containers and closures.

The results of such examinations are commonly expressed in terms of viable bacteria per gram of paper. The technique of examination may be divided into sampling, preparation of sample for plating, and plating of sample.

In the course of routine determinations of bacterial content of paperboard, a convenient technique of sampling has been developed which yields consistently representative samples without requiring the use of sterile containers or special aseptic technique at the point of sampling.

Sanborn *(1)* described a simple and inexpensive apparatus for the aseptic pulping of paperboard samples, and gave details of plating technique. Our equipment and technique are based on those of Sanborn, but involve certain modifications which we have found advantageous.

Sampling Technique

Each car of paperboard received by the converter plant is sampled. Five or more rolls of paperboard are taken at random from the car for sampling. A special knife, with an adjustable guard permitting it to cut to a predetermined depth, and a hand stapler are the only instruments required for sampling. The covering is removed from one side of a roll of paperboard and a sample approximately ten inches square is cut out to a depth of four or five layers. As each corner of the sample is cut free, the several layers are fastened together with staples. Sample identifications are marked on the outer layer. The samples are placed in a clean manila envelope and sent to the bacteriological laboratory.

In the laboratory, the outer sheets are discarded and the inner sheets are trimmed with sterile shears. Thus the portion of the sample actually used for bacteriological examination has been protected from any handling, dust or other source of contamination.

Pulping Apparatus

The pulping apparatus consists of a twin-propeller electric mixer with a special pulping churn. It is essentially as described by Sanborn, except that we use a welded stainless steel churn and stainless steel cover. Near one corner of the cover we have a circular opening covered with a stainless steel tab which may be pushed aside to admit a pipette for withdrawing aliquots of the pulped sample for plating. This permits plating without uncovering the churn or stopping agitation of the pulped sample, thus minimizing adventitious contamination and insuring more representative aliquots for plating. The pulping apparatus is shown in Fig. 1 during withdrawal of an aliquot.

J. R. Sanborn has informed us by private communication that his laboratory and certain other laboratories no longer use this type of pulping apparatus. Some laboratories have used ball mills for the aseptic pulping of paper samples. Dr. Sanborn and a number of other workers now use a

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 19-22, 1940.

[1] Member TAPPI, Foster D. Snell, Inc., Brooklyn, N. Y.

[2] Foster D. Snell, Inc., Brooklyn, N. Y.

high speed, propeller type electric mixer[3]. We have been informed that this mixer requires only 3 to 5 minutes for the complete pulping of a paperboard sample as compared with the 20 to 30 minutes required by the apparatus described in the present paper. However, some difficulty with leakage from the churn of this mixer has been reported. Our apparatus is inexpensive, sturdy, and free from leakage troubles. When used by a single operator in the examination of a series of samples, the time required for the pulping of each sample is conveniently utilized in performing other parts of the work, so that there is actually no time lost. We hold no particular brief for the type of pulping apparatus we use as compared with certain other types, but we do find our apparatus quite satisfactory for routine work.

Preparation of Sample

After aseptic trimming, the sample is cut into small pieces with sterile shears, and a 10-g. portion is weighed out in a sterile dish. The weighed sample is transferred to a sterile, cotton-plugged graduated Pyrex flask containing 1000 cc. of sterile water. The flask is placed in a refrigerator, and the sample is allowed to soak for 2 to 6 hr. at a temperature of 35 to 40 deg. F. before pulping.

The churn, cover, and propellers of the pulping apparatus are wrapped in paper and sterilized at 15 lb. per sq. in. steam pressure for 30 minutes. The bushings on the motor which project through the cover of the pulping churn are wiped with 95 per cent alcohol and flamed.

The soaked sample and the water in which it was soaked are transferred to the churn, and the pulping apparatus is assembled, using sterile forceps or sterile cotton to hold the parts during assembly. As a further precaution, the hands of the operator are rinsed with 5 per cent alcoholic phenol solution and wiped with a clean towel just before assembling the pulping apparatus.

[3] Made by Stevens Electric Co., Racine, Wis.

FIG. 1.

The pulping motor is operated at high speed for about 20 to 30 minutes, or long enough to disintegrate the sample thoroughly. The progress of pulping may be observed at any stage by drawing part of the sample up into a sterile pipette inserted through the sampling hole in the cover.

When several samples, all of relatively low bacterial content, i.e., not more than a few hundred organisms per gram, are to be examined in succession, steam sterilization of the pulping apparatus between samples is not necessary. The apparatus is quickly disassembled, and the contents of the churn are emptied. The churn is rinsed several times with sterile water, using a total of 2 to 3 liters for rinsing. The propellers and cover are dipped in 95 per cent alcohol and flamed. The next sample is then transferred to the churn, and the procedure described for the first sample is followed. This technique results in negligible transfer of bacterial contamination from one sample to the next, as we have found by plating of the final rinse water from the churn.

Plating Technique

The pipettes used for withdrawing aliquots for plating are ordinary 10-cc. Mohr pipettes, graduated between marks, with the tips cut and ground to approximately 4 mm. internal diameter. These pipettes, with cotton plugs in their stems are sterilized by dry heat in the usual manner.

In the course of routine determinations, we have used three methods of plating the same samples in order to evaluate the methods. In Method 1 ten 5-cc. aliquots were plated in each of ten regular 100-mm. Petri dishes with 5.5 to 6.5 cc. of double strength standard nutrient agar[4]. In Method 2 a 10-cc. aliquot was plated in a 150-mm. Petri dish with 27 to 29 cc. of the standard nutrient agar. In Method 3 a 10-cc. aliquot was plated in a 150-mm. Petri dish with 27 to 28 cc. of the standard nutrient agar containing 2 per cent agar-agar.

In each method the aliquots were withdrawn from the churn during agitation of the pulped sample and placed in sterile Petri dishes. The nutrient agar was then added to the dish and uniformly mixed with the aliquot of pulp by careful shaking of the dish. In order to minimize adventitious contamination, the nutrient agar for each Petri dish was put up and sterilized in an individual culture tube. Incubation of all plates was at 37 deg. C. for 48 hours.

Results of Routine Determinations

The results of bacterial counts by plating Methods 1 and 2 on 19 samples of paperboard are compared in Table I. In this series of determinations, only 4 of the 19 plates prepared by Method 2 were free from spreader colonies, while 7 plates were so overgrown with spreader colonies as to render counts impossible. By sharp contrast, only 3 of the 190 plates prepared by Method 1 showed any spreader colonies, and in these the counts were not seriously obscured.

Three of the counts by Method 2 were higher and 9 were lower than the corresponding counts by Method 1. The counts by Method 2 averaged 13 per cent lower than the counts by Method 1.

[4] Standard nutrient agar: 0.5 per cent Bacto-peptone, 0.3 per cent Bacto-beef extract and 1.5 per cent Bact. agar-agar.

The results of bacterial counts by all three plating methods on 37 samples of paperboard are compared in Table II. In this series, only 21 of the Method 2 plates were free from spreaders, while 4 plates were too overgrown with spreaders to count. Only 2, or 5.4 per cent of the Method 3 plates showed spreaders, and only 9, or 2.4 per cent of the Method 1 plates showed spreaders. In none of the Method 1 or 3 plates was counting rendered impossible by spreaders.

Five of the counts by Method 2 were higher and 28 were lower than by Method 1. The counts by Method 2 averaged 21 per cent lower than by Method 1. Ten of the counts by Method 3 were higher and 27 were lower than by Method 1. The counts by Method 3 averaged 5 per cent lower than by Method 1.

In Method 1 a total of 0.5 g. of each sample was actually plated, while in each of the other methods only 0.1 g. of each sample was plated. Thus the results of Method 1 should be much more reliable, particularly with samples of low bacterial content.

Only 2.1 per cent of all the Method 1 plates developed spreader colonies, while 5.4 per cent of the Method 3 plates and 55 per cent of the Method 2 plates developed spreader colonies. Since the medium used in Method 1 contained 3 per cent agar-agar, in Method 3 2 per cent agar-agar, and in Method 2 only 1.5 per cent agar-agar, the conclusion is obvious that increased concentration of agar-agar above that in standard nutrient agar is quite effective in inhibiting spreader colony growth in the examination of pulped paper as discussed. Our results also indicate that the higher agar-agar concentration yields higher and therefore more reliable bacterial counts.

Conclusion

Sampling rolls of paperboard for bacterial count determination by cutting a section several layers deep with a special knife, stapling the layers together and placing the sample in a manila envelope has been found reliable and convenient.

TABLE I.—COMPARISON OF BACTERIAL COUNTS FOUND BY TWO METHODS OF PLATING PULPED PAPERBOARD SAMPLES

Sample No.	Bacterial Count Found Per Gram of Sample: Method 1 Aver. from 10 plates per sample	Method 2	Deviation of results of Method 2 from Method 1, Per cent	Number of Plates in Method 1 showing spreader colonies	Estimated portion of Plate in Method 2 covered by spreader colonies, Per cent
188	76	40	—47	1	75
189	22	30	+36	0	75
190	88	60	—32	0	none
191	42	30	—29	0	75
192	36	30	—17	0	none
193	18			0	100
194	28			0	100
195	44			0	100
196	86			0	100
197	26	40	+54	0	75
198	33	30	— 9	0	75
199	56	50	—11	0	50
200	20			0	100
201	66	40	—40	0	50
202	32	30	— 6	0	none
203	218			1	100
204	104			0	100
205	28	30	+ 7	0	75
207	273	260	— 5	1	none

TABLE II.—COMPARISON OF BACTERIAL COUNTS FOUND BY THREE METHODS OF PLATING PULPED PAPERBOARD SAMPLES

Sample No.	Bacterial count found per gram of sample: Method 1, Avg. from 10 plates per sample	Method 2	Method 3	Deviation of results of Method 2 from Method 1, per cent	Deviation of results of Method 3 from Method 1, per cent	Number of plates in Method 1 showing spreader colonies	Estimated portion of plate in Method 2 covered by spreader colonies, per cent	Estimated portion of plate in Method 3 covered by spreader colonies, per cent
206	24	20	30	—17	+25	0	75	none
208	44	20	30	—55	—32	0	75	none
209	50	20	40	—60	—20	0	75	50
210	47	..	60	..	+28	1	100	none
211	58	..	50	..	—14	2	100	none
212	110	60	130	—45	+18	0	75	none
213	24	30	30	+25	+25	0	none	none
230	216	180	210	—17	— 3	0	none	none
231	44	40	50	— 9	+25	0	none	none
232	30	40	40	+33	+33	0	none	none
233	12	0	10	—100	—17	0	none	none
234	28	10	20	—64	—29	0	none	none
235	112	40	50	—64	—55	0	75	none
253	118	50	100	—58	—15	2	100	none
254	22	20	20	— 9	— 9	0	50	none
255	12	20	10	+67	—17	0	none	none
256	124	60	80	—52	—35	2	75	75
257	68	50	60	—26	—12	0	75	none
258	52	40	40	—23	—23	0	none	none
259	190	..	180	....	— 5	2	100	none
260	20	20	20	none	none	0	50	none
261	18	20	20	+11	+11	0	none	none
262	22	20	20	— 9	— 9	0	none	none
263	24	20	20	—17	—17	0	none	none
264	184	..	190	....	+ 3	0	100	none
265	220	200	210	— 9	— 5	0	none	none
266	76	60	60	—21	—21	0	none	none
267	238	160	220	—33	— 8	0	75	none
268	32	30	30	— 6	— 6	0	none	none
269	18	20	20	+11	+11	0	none	none
270	16	0	20	—100	+25	0	none	none
271	22	20	20	— 9	— 9	0	none	none
278	32	30	30	— 6	— 6	0	none	none
279	44	40	40	— 9	— 9	0	none	none
280	32	30	30	— 6	— 6	0	none	none
281	200	150	190	—25	— 5	0	75	none
282	20	20	20	none	none	0	none	none

A twin-propeller type of pulping apparatus, with a covered, stainless steel churn, and with a sampling hole in the cover, has been found very satisfactory for the aseptic pulping of paperboard samples.

Three methods of plating the pulped paperboard samples have been compared, varying the concentration of agar-agar in the nutrient medium and the number of plates and quantity of material plated per sample. Much greater freedom from spreader colony formation has been found with a nutrient medium double the normal strength. Plating a total of 0.5 g. of sample in 10 standard Petri dishes has given apparently more reliable counts than plating only 0.1 g. of sample in a single large Petri dish.

Literature Cited

(1) Sanborn, J. R., *Am. J. Public Health* 28, no. 5:576-578 (May, 1938).

Laboratory Services to Government

Under the title of "Independent Laboratory Services To Government," the Electrical Testing Laboratories, East End avenue at 79th street, New York, has just issued an interesting pamphlet with the thought of calling the attention of the government to the commercial laboratories throughout the country as adjuncts in preparation for defense. In printing this little booklet, the company feels that commercial laboratories have a valuable experience to offer and are in a position to give service when needed as, for the most part, these laboratories employ men and women, who, because they are beyond the probable age limit, are not subject to call for active service.

Comparison of the Cooking Stain Method And Chemical Methods for Determining The Bleachability of Pulps*

By John F. Hechtman[1] and John H. Graff[2]

Abstract

Cooking stain values correlate well with lignin content and likewise with those properties of a pulp dependent upon the lignin content. If the lignin content of pulps is to be regarded as a fair measure of the degree of cooking, it then follows that the cooking stain value is also a fair measure of the degree of cooking. Permanganate number and chlorine number also show a good correlation with the lignin content.

The adsorption of Malachite Green is the controlling factor in determining the cooking stain value of a pulp and is a direct function of the lignin content. The dye adsorption changes faster for a given change in lignin content for sulphite pulps than for alkaline pulps.

The permanganate number gives a somewhat better indication of bleach requirement than the cooking stain value and chlorine number for the pulps used in this investigation. However, it is possible that a correlation comparable with the permanganate number might result if a greater range of pulps had been studied.

A definite relationship exists between the cooking stain and permanganate number; however, this relation is different for different types of pulps, i.e., sulphite, kraft, and soda. The relation between chlorine number and cooking stain is quite similar for sulphite, kraft, and soda pulps. This similarity indicates that these two methods tend to measure the same properties of a pulp.

The terms "degree of cooking" and "bleachability of pulps" are often used synonymously, since the fundamental operation in a pulping process is the removal of the cementing material (lignin) about the fibers to permit defibering of the wood. The extent to which this is removed may be taken as the degree of cooking, whereas bleachability implies the amount of bleach required and the rate of bleaching of a pulp to a predetermined brightness or whiteness. Although lignin is chiefly responsible for the consumption of bleach by pulps, the pitch, resins, and other oxidizable materials also play a part in this reaction.

Methods for Determining Bleachability

The methods which have been devised for determining the degree of cooking and bleachability are numerous and vary greatly in principle. The purpose of this work, therefore, has been to compare the results obtained in determining the degree of cooking and bleachability by the cooking stain method with those obtained by more extensively used methods.

The prerequisites of any method for determining these qualities of a pulp, from the standpoint of mill control, are that the method requires a comparatively short time for completion, that it measures the same quality of a pulp consistently, and that it has sufficient accuracy. These methods may be divided into five groups and summarized as follows *(1)*:

Direct Method

This method involves the use of bleaching powder in an experimental stage. Although a good indication of the bleach consumption is obtained, this method is not suitable for mill control because of the time involved in making the determination.

Colorimetric Method

This method involves the treatment of pulps with an active chemical which imparts a color to the fibers. The resulting color is compared with the color obtained by treating a pulp of known bleach requirement in a like manner.

Direct Lignin Determination

By this method the cellulose is hydrolyzed and dissolved by the action of strong acids. The lignin is insoluble and may be filtered and weighed. This method requires considerable technique and is not suitable for mill control because of the time involved *(2)*.

Oxidation Method

Since the incrustants in pulps are readily oxidized, a measure of the bleachability of the pulp may be obtained by determining the amount of oxidizing agent consumed. Nitric acid, chromic acid, potassium permanganate, chlorine, and bromine have been used as oxidizing agents *(1)*. Methods based on this principle are the most simple and rapid; therefore, they are found in more general use than other methods. The most familiar are the permanganate and the chlorine methods.

Staining Method

In 1918 Asher found that, upon staining a pulp with a standard Malachite Green solution, it was possible to determine its bleachability by comparing the color of the stained fibers, observed under the microscope, with graded standards *(1)*. Seibert and Minor have used a combination of Malachite Green and Congo Red to distinguish bleached and unbleached sulphite pulps *(3)*. A microscopical examination of fibers stained with these two dyes reveals that some fibers are dyed only by Congo Red, others are dyed by both Congo Red and Malachite Green, and still others by Malachite Green alone. A critical examination shows that the unbleached fibers vary in color from green through green-red to red. Using these facts as the underlying principle of the cooking stain,

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A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Master of Science from Lawrence College, Appleton, Wis., June, 1939.

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Graff has improved the technique, developed the procedure of staining, standardized the method, and made it applicable for determining the bleachability or degree of cooking of pulps *(4)*.

Pulps and Solutions Used

The pulps employed in this investigation consist of sulphite, kraft, and soda and were supplied by several mills. In order to provide for irregularities in the pulps caused by the conditions of cooking as well as the differences in species, it was necessary to distinguish the sulphite produced in one mill from that produced in another mill. This was also true of the kraft and soda pulps. Therefore, the pulps were divided into general groups as follows:

Group I. Softwood sulphite
Group II. Softwood kraft
Group III. Hardwood soda.

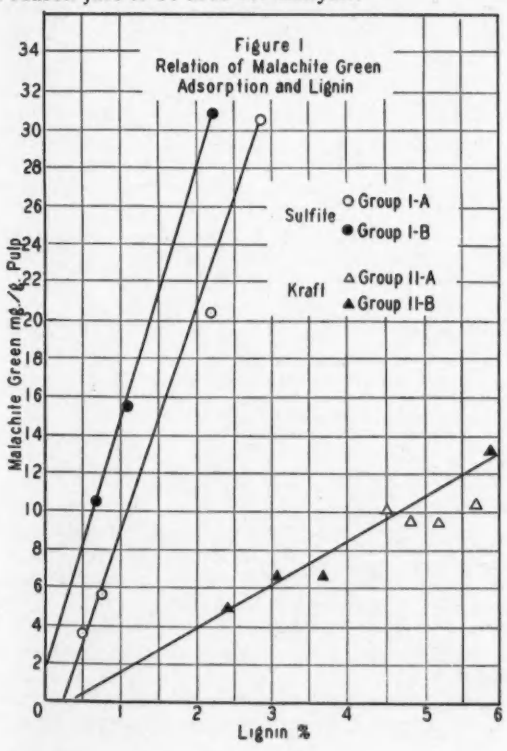
The general groups were subdivided to show that the pulps were of the same origin with respect to wood species and pulping conditions. The only exception to this arrangement was Group I-C, which consisted of different species of wood cooked under the same conditions and Group I-D which was a mixture of two softwoods with about 10 per cent hardwood. The classification with respect to the pulps used throughout this investigation was as follows:

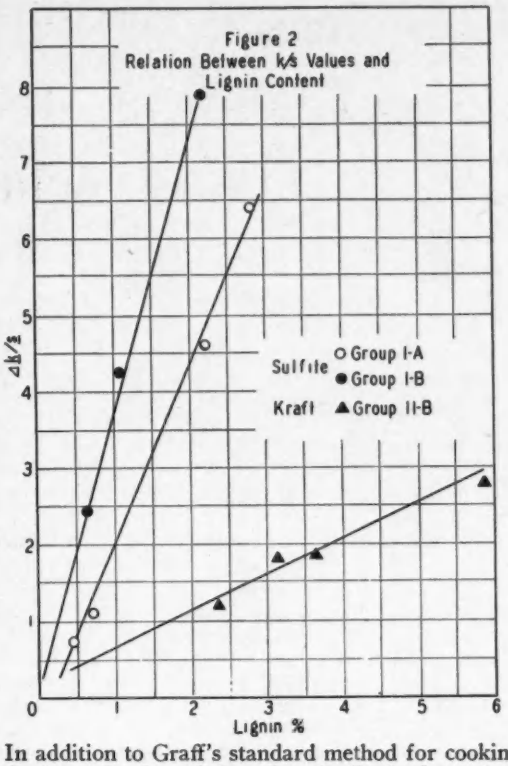
Group I. (Softwood sulphite)
A. 16, 17, 19, and 20
B. 29, 30, and 31
C. 10, 11, 12, and 13
D. 25, 26, and 27

Group II. (Softwood kraft)
A. 1, 2, 3, and 4
B. 5, 6, 7, and 8

Group III. (Hardwood soda)
A. 22, 23, and 24.

All of the pulps were received either in the form of laps or loose pulp. After allowing them to air-dry, they were run through a pulp disintegrator and stored in Mason jars to be used for analysis.





In addition to Graff's standard method for cooking stain determination of the pulps, the lignin determination was carried out in duplicate by Institute Method 428, and the permanganate number was determined according to Institute Method 410. The chlorine consumption was determined according to the method of Roe *(5)* with the exception that a reaction temperature of 20 deg. C. was used instead of 15 deg. C. The bleach requirement was carried out according to Institute Method 409, using 55 deg. C. as the bleaching temperature instead of 40 deg. C. The bleach requirement was determined at a brightness of 75 as measured by the G. E. reflection meter using Filter 1 for the pulps of Group I.

Adsorption of Malachite Green and Congo Red By Fibers

In order to justify the use of the cooking stain as a method for determining the degree of cooking or bleachability, it is necessary to know something of the mechanism of the dye adsorption and the relation of dye adsorption to some property of the pulp. The fact that Malachite Green is readily adsorbed by lignified but not by bleached fibers (unless considerably overbleached) suggests that there may be a direct relation between the lignin present in a pulp and the amount of dye adsorbed by that pulp.

Experiments were therefore carried out in which various pulps were treated with the Malachite Green solution only. The adsorbed dye was removed from the pulp by extraction of about 150 mg. with 75 cc. of a 50-50 mixture of 0.02 *N* thorium nitrate and ethyl alcohol *(6)*. The dye in the filtrate was determined by means of a G.E. recording spectrophotometer; the optimum wavelength was found to be at 624 mmu with dye concentrations from 1 to 14 mg. per liter *(7)*.

Similar results were carried out with Congo Red; in this case, however, the dye adsorbed was deter-

TABLE I—RELATION OF DYE ADSORPTION AND LIGNIN

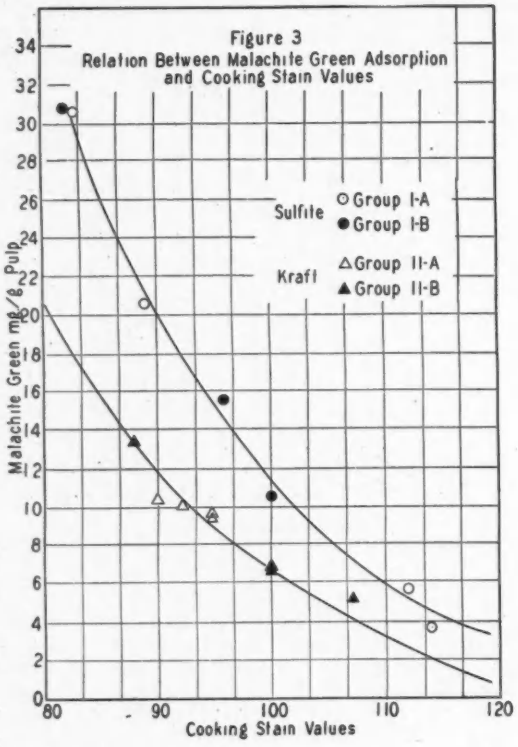
	Pulp	Lignin %	Malachite Green mg./g. pulp	Congo Red mg./g. pulp
		Group II—Kraft		
A	1	2.69	10.44	17.6
A	2	5.21	9.54	17.0
	3	4.80	9.62	...
	4	4.46	9.30	18.8
B	5	5.93	13.39	...
B	7	3.05	6.96	...
	7	2.39	5.27	...
	8	3.63	6.86	...
		Group I—Sulphite		
A	16	2.83	30.60	22.0
A	17	0.74	5.66	21.7
	19	0.47	3.72	25.0
	20	2.20	20.50	...
B	29	1.08	15.56	...
B	30	0.67	10.62	...
	31	2.20	30.96	...

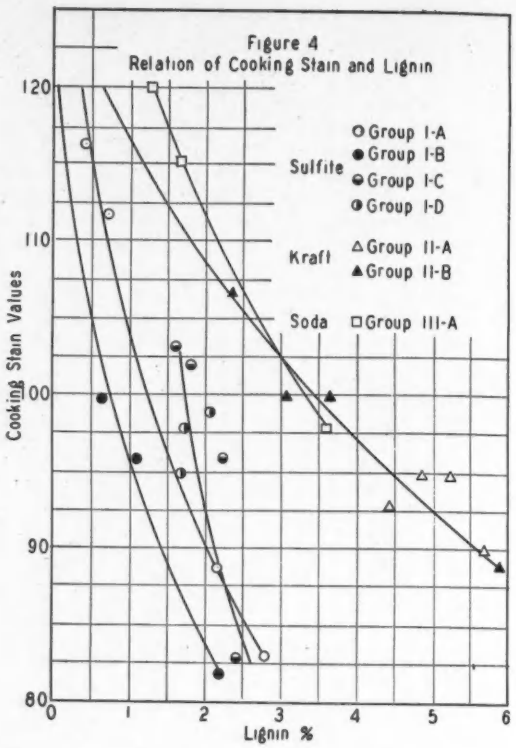
mined by the difference in concentration of the dye solution before and after the dyeing operation.

The results of these experiments are shown in Table I, in which the dye adsorption is given as milligrams of dye adsorbed per gram of pulp.

Figure 1 gives the relation between the lignin content and the Malachite Green adsorption of the pulps. These curves show that there is a distinct difference in the adsorption of dye by sulphite pulps and by kraft pulps. When one considers the difference in the nature of the lignin occurring in sulphite and kraft pulps, these results are not surprising. The residual lignin in sulphite pulps contains sulphonic acid groups which will react readily with or adsorb basic dyes, whereas the lignin of kraft pulps contains groups which are less acidic than the sulphonic acid in the sulphite and hence adsorb less dye.

By means of the equation developed by Kubelka and Munk *(8)*, it is possible to derive a relation between the amount of Malachite Green adsorbed by a pulp and a function of the monochromatic reflectivity of the dyed and undyed pulps *(9)*. Equation 1





defines the monochromatic reflectivity of an opaque sheet:

$$R = 1 + K/S - [(K/S)^2 + 2(K/S)]^{0.5}, \qquad (1)$$

where K is the adsorption coefficient of the material or the fraction of the incident energy lost by adsorption per unit thickness of material and S is scattering coefficient or fraction of incident energy lost due to scattering per unit thickness of material.

Solving Equation 1 for K/S gives Equation 2, from which the value of K/S may be obtained if the monochromatic reflectivity is known, i.e.,

$$K/S = (1 - R)^2/2R. \qquad (2)$$

It can be shown, assuming the scattering coefficient to remain constant, that the difference between the K/S values for a dyed and undyed sheet is proportional to the amount of dye adsorbed by the fibers *(9)*.

The results of applying Equation 2 to the pulps investigated are shown in Table II.

TABLE II—SAMPLE CALCULATION OF $\Delta K/S$

	Wavelength — 540 mmu				
	Dyed		Undyed		
Pulp	R	K/S	R	K/S	$\Delta K/S$
16	6.7	6.49	68.0	0.07	6.42
17	24.6	1.16	70.0	0.06	1.09
19	31.2	0.76	72.3	0.05	0.71
20	8.8	4.73	65.7	0.09	4.64
29	9.3	4.42	56.8	0.16	4.26
30	14.2	2.60	57.4	0.16	2.43
31	5.5	8.12	51.6	0.23	7.89

If the $\Delta K/S$ values are plotted against the lignin content of a series of pulps, a good correlation is obtained as shown in Fig. 2. This suggests the possibility of measuring the lignin content or degree of cooking of a pulp by dyeing pulps with Malachite Green alone and determining the reflectivity and subsequently $\Delta K/S$ with an instrument such as the G.E.R.M. using Filter 5 (wavelength, 530 mmu).

The adsorption of Congo Red for a given group

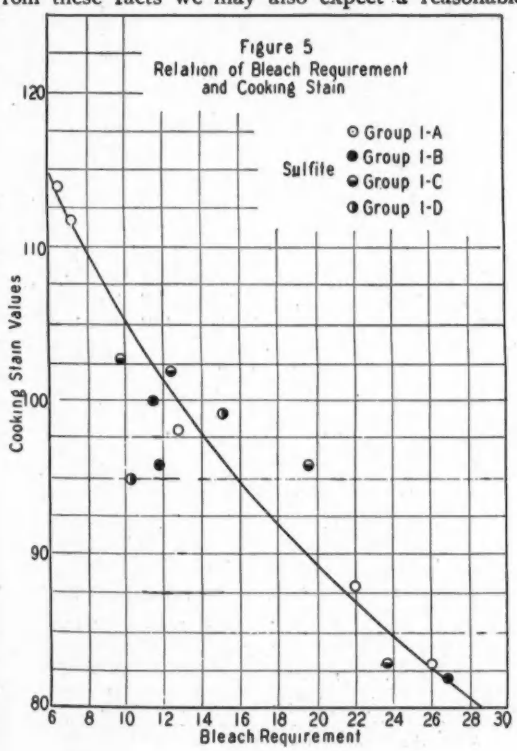
of pulps is nearly the same within the range studied in this investigation. From the spectrophotometric curves of the undyed, Malachite Green-dyed, and Congo Red-dyed sheets and a knowledge of the maximum and minimum Congo Red adsorption of a series of these pulps, it is possible to show that the cooking stain values of these pulps are determined solely by the Malachite Green adsorption of the pulps and that the purpose of the Congo Red is to provide a hue change which makes possible a visual rather than an instrumental classification of the cooking stain values, in addition to providing a greater spread of these values.

Table III and Fig. 3 show the relation between the cooking stain values and Malachite Green adsorption.

TABLE III—RELATION OF COOKING STAIN VALUES AND MALACHITE GREEN ADSORPTION

Group	Pulp	Cooking stain value *(10)*	Malachite Green mg./g. pulp
I-A	16	83	30.60
	17	112	5.66
	19	114	3.72
	20	89	20.50
I-B	29	96	15.56
	30	100	10.62
	31	82	30.96
II-A	1	90	10.44
	2	95	9.54
	3	93	9.62
	4	92	10.12
II-B	5	89	13.39
	6	100	6.96
	7	107	5.27
	8	100	6.86

The differences in this relation for sulphite and kraft pulps may be accounted for by the differences in adsorption of Congo Red by these two types of pulps. The correlation between the cooking stain values and Malachite Green adsorption is surprising when one considers that the cooking stain values are merely arbitrary values assigned to definite colors. From these facts we may also expect a reasonable correlation between lignin content and cooking stain values. Figure 4 shows this relationship.



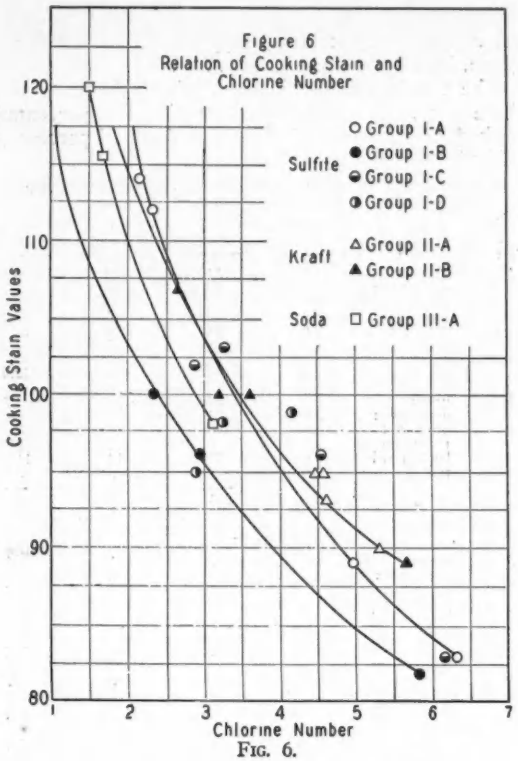


FIG. 6.

The relation between the lignin content, the cooking stain values, the permanganate number, the Roe chlorine number, and the bleach requirements for the pulps was determined, the results of which are given in Table IV. Figure 5 shows the relationship between the cooking stain values and bleach requirement and Fig. 6 the relationship between the cooking stain values and the chlorine numbers of these pulps.

TABLE IV—RESULTS OF DEGREE OF COOKING AND BLEACHABILITY TESTS

Group	Pulp	Lignin %	Cooking stain value	Permanganate no.	Roe chlorine no.	Bleach requirement
I-A	16	2.83	83	19.6	6.29	26.0
	17	0.74	112	7.7	2.35	7.3
	19	0.47	114	6.6	2.17	6.6
	20	2.20	89	16.7	4.94	22.0
I-B	29	1.08	96	12.4	3.00	11.8
	30	0.67	100	9.6	2.36	11.5
	31	2.20	82	19.0	5.81	26.7
I-C	10	1.84	102	11.9	2.93	12.4
	11	1.56	103	11.5	3.32	9.8
	12	2.28	96	16.1	4.53	19.7
	13	2.46	83	18.9	6.17	23.5
I-D	25	2.04	99	12.2	4.15	15.2
	26	1.75	98	12.6	3.28	12.9
	27	1.70	95	11.7	2.98	10.3
II-A	1	5.69	90	24.6	5.28	...
	2	5.21	95	23.6	4.48	...
	3	4.80	95	23.2	4.52	...
	4	4.46	92	22.6	4.56	...
II-B	5	5.93	89	27.2	5.61	...
	6	3.05	100	16.9	3.20	...
	7	2.39	107	13.0	2.65	...
	8	3.63	100	18.0	3.57	...
III-A	22	1.70	115.5	10.7	1.69	...
	23	3.57	98	15.9	3.11	...
	24	1.37	120	10.4	1.50	...

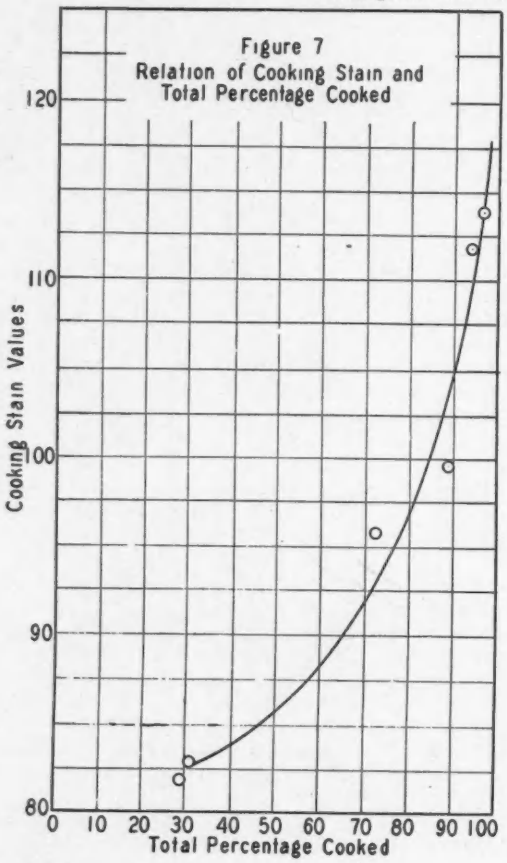
Sheets from six pulps treated with the cooking stain were selected to demonstrate the determination of the uniformity of the cook of a pulp. The sheets were dispersed in water and microscopic slides were prepared. When the fibers were viewed under the

microscope it was possible to make the following color classification: green, gray-green, green-red, red-green, broken red, and red *(4, 10)*.

The tabulations in Table V show the results of these tests. The *a* x *b* values give the percentage cooked, and the sum of these give the total percentage cooked.

TABLE V.—TABULATION OF UNIFORMITY TEST

Test	Color	a Cooking value	Frequency	b Percentage by number	a x b
Pulp 16					
1	green	10	71	40	4.0
	gray-green	20	54	31	6.2
	green-red	40	2	1	0.4
	red-green	60	9	5	3.0
	broken red	80	32	18	14.4
	red	100	8	5	4.0
			176		32.0
2	green	10	72	37	3.7
	gray-green	20	74	38	7.6
	green-red	40	9	4	1.6
	red-green	60	7	4	2.4
	broken red	80	28	14	11.2
	red	100	5	3	3.0
			195		29.5
				Average.....	30.7%
Pulp 17					
1	green	10	2	1	0.1
	gray-green	20	0	0	0.0
	green-red	40	1	1	0.4
	red-green	60	24	11	6.6
	broken red	80	20	9	7.2
	red	100	168	78	78.0
			215		92.3
2	green	10	2	1	0.1
	gray-green	20	0	0	0.0
	green-red	40	6	2	0.8
	red-green	60	26	10	6.0
	broken red	80	18	7	5.6
	red	100	201	80	80.0
			253		92 5
				Average.....	92.5%
Pulp 19					
1	green	10	0	0	0.0
	gray-green	20	0	0	0.0
	green-red	40	2	1	0.4
	red-green	60	14	7	4.2
	broken red	80	7	3	2.4
	red	100	182	89	89.0
			205		96.0
2	green	10	1	0	0.0
	gray-green	20	0	0	0.0
	green-red	40	2	1	0.4
	red-green	60	14	6	3.6
	broken red	80	8	4	3.2
	red	100	202	89	89.0
			227		96.2
				Average.....	96.1%
Pulp 29					
1	green	10	13	7	0.7
	gray-green	20	11	6	1.2
	green-red	40	16	8	3.2
	red-green	60	15	8	4.8
	broken red	80	87	44	35.2
	red	100	54	27	27.0
			196		72.1
2	green	10	12	7	0.7
	gray-green	20	6	3	0.6
	green-red	40	8	5	2.0
	red-green	60	20	11	6.6
	broken red	80	87	50	40.0
	red	100	42	24	24.0
			175		73.9
				Average.....	73.0%
Pulp 30					
1	green	10	3	2	0.2
	gray-green	20	1	0	0.0
	green-red	40	5	3	1.2
	red-green	60	15	8	4.8
	broken red	80	42	22	17.6
	red	100	123	65	65.0
			189		88.8
2	green	10	4	2	0.2
	gray-green	20	1	0	0.0
	green-red	40	11	6	2.4
	red-green	60	12	6	3.6
	broken red	80	26	13	10.4
	red	100	149	73	73.0
			203		89.6
				Average.....	89.2%
Pulp 31					
1	green	10	64	35	3.5
	gray-green	20	61	33	6.6
	green-red	40	24	13	5.2
	red-green	60	23	12	7.2
	broken red	80	12	7	5.6
	red	100	0	0	0.0
			184		28.1
2	green	10	70	34	3.4
	gray-green	20	67	32	6.4
	green-red	40	13	6	2.4
	red-green	60	38	18	10.8
	broken red	80	20	10	8.0
	red	100	0	0	0.0
			208		31.0
				Average.....	29.6%



The total percentage bears a definite relationship to the cooking stain value, as shown in Fig. 7, and an idea of the uniformity of cook of the fibers may be obtained from the distribution of fibers of different degrees of cooking. For example, Pulp 16 is much more uniform than Pulp 31, although these two pulps are cooked to about the same degree.

Literature Cited

(1) Karlberg, R., *Paper Trade J.* 92, no. 11:41-44 (March 12, 1931).
(2) Johansson, David, *Paper Trade J.* 101, no. 13:101-104 (Sept. 26, 1935).
(3) Seibert, Florence B., and Minor, Jessie E., *Paper* 25, no. 21:17-20 (Jan. 28, 1920).
(4) Graff, John H., *Paper Trade J.*, no. 11:65-73 (Sept. 14, 1939).
(5) Roe, Ralph B., *Ind. Eng. Chem.* 16:808-811 (1924).
(6) Bungerberg de Jong, H. C., and Lens, J., *Biochem. Z.* 254:15-34 (1932).
(7) Harrison, Ward D., *Tech. Assoc. Papers* 20:314-320 (June, 1937); *Paper Trade J.* 105, no. 13:39-45 (Sept. 23, 1937).
(8) Steele, F. A., *Paper Trade J.* 100, no. 12:37-42 (March 21, 1935); *Tech. Assoc. Papers* 18:299-304 (June, 1935).
(9) Nolan, Philip, *Tech. Assoc. Papers* 20:336-339 (June, 1937); *Paper Trade J.* 105, no. 14:42-45 (Sept. 30, 1937).
(10) Graff, John H. "A color atlas for fiber identification." Appleton, Wis., The Institute of Paper Chemistry, 1940.

Effect of Atmospheric Humidity on Newsprint*

By Douglas Jones[1]

Abstract

A brief summary of the author's work on the effects of atmospheric humidity on newsprint paper. Particular reference is made to the change in moisture content of newsprint paper in wrapped rolls during storage and the effects of atmospheric humidity on newsprint in wrapped rolls.

Many papers have been published which dealt with the subject of printability, effects of humidity, etc., on paper as it affects printability. Bibliographies give us all the necessary references to this work, so I have not attempted to include them here. However, most of the work previously reported has dealt with grades other than newsprint and usually with paper in sheet form which is affected in a different manner than is paper in wrapped rolls.

General Effects of Atmospheric Humidity on Newsprint

Due to the efforts of the air conditioning industry and to numerous investigations of the effects of humidity on mostly all grades of paper and on its subsequent printability, we have become definitely "moisture" or "humidity" conscious during the past 10 years or so. Newsprint and other papers, on account of their structure are physically changed when exposed to atmospheres other than that at which they were in equilibrium as indicated by the moisture content when made. We know for instance that newsprint containing 7 per cent moisture will be at equilibrium in an atmosphere at 35-40 per cent relative humidity and 70 deg. F. If the conditions of the atmosphere are changed, a change in the moisture content of the paper also takes place. A typical absorption curve for newsprint is shown in Fig. 1.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 19-22, 1940.

[1] Control Engineer, Ontario Paper Co. Ltd., Thorold, Ont., Canada.

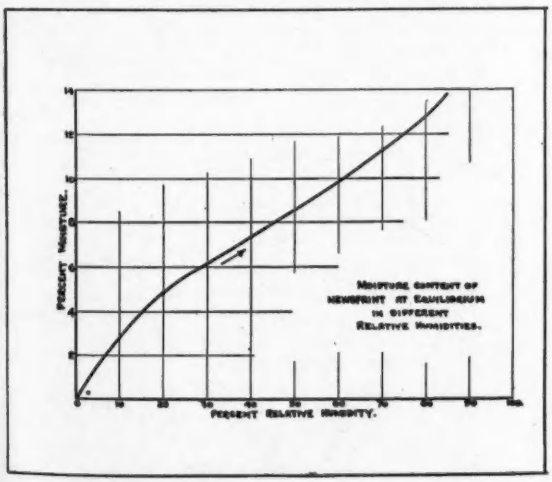


FIG. 1.

It should be borne in mind that in comparing the moisture absorption and desorption curves, even in one grade such as newsprint, equilibrium moisture contents at various relative humidities are dependent on the furnish. Increases in the percentage of groundwood tend to increase the moisture content at a fixed relative humidity, while most of the known paper fillers will cause the paper to retain less moisture at the fixed humidity.

The effect of this absorption of water upon the physical properties of a news sheet have been described by J. P. Grant in his paper on "Effect of humidity on newsprint" read at the American Newspaper Publishers Association meeting in June, 1938. We know that the caliper, bulk, and basis weight increase as the moisture content and percentage relative humidity increase. We also know that in the drying process in the manufacture of paper there are certain stresses set up which become fixed when the sheet is dried to from 7 to 7.5 per cent moisture and then wound tightly in the reel and subsequently into rolls on the winder.

When sheets of newsprint are exposed to humid atmospheres, the fibers are softened by both adsorption and absorption of moisture, and the stresses fixed in the sheet are released. The sheet loses its rattle and becomes soft and bulky with an accompanying loss of finish. If the sheet of newsprint is subsequently subjected to the atmosphere at which it was originally in equilibrium, then we find that it will return to approximately the same basis weight and moisture content, but the stresses, released by the higher moisture, are not returned to their original state. Caliper and bulk tend to approach their original state but do not nearly arrive at it. The surface condition does not return to its original state as the fibers, which have been released from the positions into which they had been set by the calendars, have become flexible and so stick up from the surface. This explains the higher bulk and poorer finish for the paper after its return to the original moisture content.

Certain experimental work has been carried out in our laboratory to determine to what degree newsprint in sheets is affected by variation in atmospheric humidity. This work has borne out the generally accepted conceptions that paper, a highly hygroscopic material, picks up or loses moisture dependent upon the atmosphere to which it is subjected.

Following this preliminary work, it was decided to continue the work by making some determinations of the effects of humidity on paper in wrapped rolls.

Effect of Humidity on Newsprint in Wrapped Rolls

In handling rolls of newsprint in most storage sheds by means of overhead travelling cranes, etc., it

TABLE I—PHYSICAL CHANGES IN WRAPPED NEWSPRINT
(After one month's storage—average results for 27 rolls examined)

Sample	Basis weight (24x36-500)	Thickness, ten-thousandths in.	Bulk, sp. vol.	Moisture, per cent
Top sheet (under wrapper).	33.4	36.5	1.70	8.5
50th sheet (approx. 0.174 in. into roll).....	33.2	34.8	1.64	8.0
1 inch below 50th sheet....	33.0	33.7	1.59	7.4
Original ave.....	33.0	33-34	1.56-1.61	7.5

Three more rolls were examined more thoroughly as shown in Table II.

TABLE II—PHYSICAL CHANGES IN WRAPPED NEWSPRINT
(After one month's storage—average results for 3 rolls examined)

	Basis weight (24x36-500)	Thickness, ten-thousandths in.	Bulk, sp. vol.
Top sheet	33.4	36.4	1.72
10th sheet.....	33.3	35.5	1.67
20th sheet.....	33.2	35.0	1.64
30th sheet.....	33.2	34.9	1.64
40th sheet.....	33.4	34.8	1.63
50th sheet.....	33.3	34.3	1.61
75th sheet.....	33.0	34.1	1.61
100th sheet.....	33.2	34.0	1.60
1 inch below 100th (approx. 1.348 in. into roll).....	33.0	33.3	1.57
Original	33.0	33-34	1.56-1.61

is necessary to punch a hole at each end through the head wrapper to permit the plugs attached to the lifting sling to be pushed into the core. For this reason the effect of the atmospheric humidity in the storage shed is to a certain extent independent of the type of wrapper used. There are, therefore, two ways in which moisture can be absorbed or released from newsprint in the wrapped roll.

(1) Through the wall of the wrapper and radially into or out of the roll.
(2) Endwise into or out of the roll parallel to the layers of paper.

Radial Penetration

In an initial investigation of penetration type (1), we removed some 27 rolls of paper from our storage shed for test purposes. These rolls had been stored for one month in conditions which varied between 60 and 80 per cent relative humidity. The tests carried out are shown in Table I with a comparison to the original average results obtained on the paper when it was made.

Further investigation of the radial penetration of moisture into wrapped rolls was made by choosing two spots in the mill which were maintained rather closely to fixed relative humidities. Two rolls from the same set of paper from one of our machines were sampled and tested. The rolls were then wrapped and placed on platform scales at the designated spots.

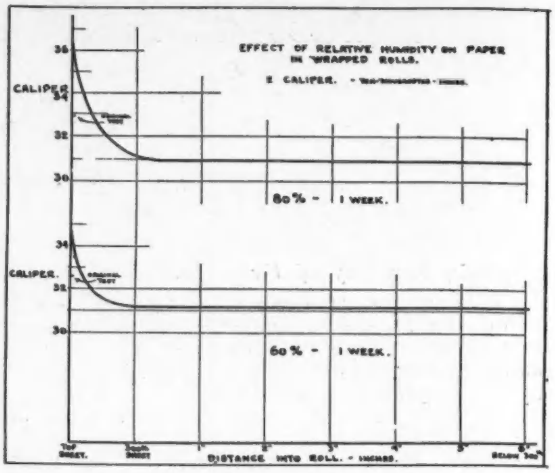


Fig. 3.

The relative humidities chosen were 60 and 80 per cent. The rolls were weighed each day for a week and were then sampled as follows:

(a) Top sheet and then every 10th sheet down to the 300th
(b) From the 300th sheet at ¼-in. intervals to 6 in. below the 300th
(c) From the 6-in. mark at ½-in. intervals into the core

These three groups gave 31, 24 and 18 samples respectively. The samples were tested for basis weight, caliper, and percentage moisture.

Figures 2, 3, 4 and 5 show the results obtained for the first two sets of samples. Samples for (a) and (b) were checked for percentage moisture, caliper, basis weight, and bulk as calculated from the caliper and basis weight. The other samples merely demonstrated normal variations in operating variables.

The points of interest which are demonstrated here are: (1) the atmospheric humidity has not affected the paper below the first inch from the top. The paper stored at 80 per cent relative humidity was affected to a greater degree and to a slightly greater depth than that at 60 per cent relative humidity. (2) Pressure within the roll caused by the swelling of the outer plies has caused a lowering of the caliper. This result may explain the increased smoothness in stored paper reported by various investigators.

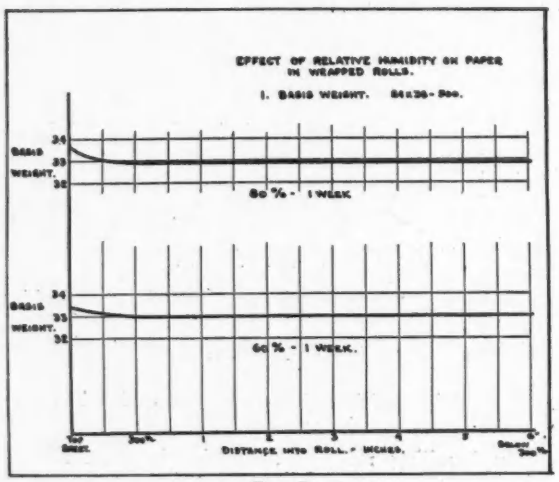

EFFECT OF RELATIVE HUMIDITY ON PAPER IN WRAPPED ROLLS.
1. BASIS WEIGHT.
BASIS WEIGHT.
80% - 1 WEEK.
60% - 1 WEEK.
DISTANCE INTO ROLL. - INCHES.

Fig. 2.

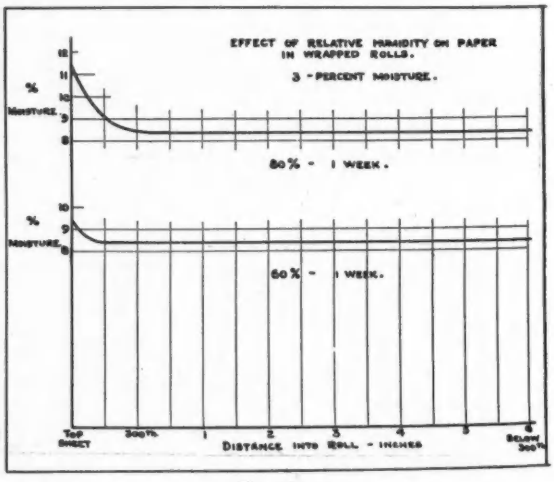

EFFECT OF RELATIVE HUMIDITY ON PAPER IN WRAPPED ROLLS.
3 - PERCENT MOISTURE.
%
MOISTURE.
80% - 1 WEEK.
60% - 1 WEEK.
DISTANCE INTO ROLL. - INCHES

Fig. 4.

TABLE III.—PERCENTAGE CHANGE IN PHYSICAL PROPERTIES

(Top sheet of news under wrapper after one week at specified relative humidity)

	Percentage change in			
	Basis wt.	Moisture, per cent	Caliper	Bulk
At 60 per cent R.H.....	+0.9	+0.9	+ 8.6	+ 7.8
At 80 per cent R.H.....	+2.1	+2.1	+14.0	+12.2

TABLE IV.—PERCENTAGE CHANGE IN PHYSICAL PROPERTIES

(92 news rolls stored for six months—paper sampled one-eighth inch below top sheet)

Percentage change in			
Basis Wgt.	Moisture, per cent	Caliper	Bulk
+2.1	+2.3	+9.0	+6.3

The results of the calculations from the original tests obtained on this paper and those obtained on the top sheets for each roll are shown in Table III.

Effect of Storage on Radial Penetration

To determine the extent of the radial penetration into rolls stored for a longer period of time, some 92 rolls which had been stored for about 6 months were examined and tested. The wrapper was removed from each roll and about ⅛ in. of the paper on the outside of the roll was removed. Samples were then collected and tested for basis weight, caliper, and moisture. Some rolls were run off on the rewinder one inch at a time to determine the depth to which the paper was affected. This was found to be about 5 inches so that we obtain a result of about one inch per month penetration of moisture, when paper is stored at a higher relative humidity than that at which it was in equilibrium when made.

The average percentage changes for the 92 rolls tested after 6 months storage are shown in Table IV.

To determine the desorption effect, one of these rolls was rewrapped after the above tests and placed in an atmosphere of 30 per cent relative humidity for 4 days and then retested. The percentage changes which took place are shown in Table V.

Investigation of Special Wrappers

Some investigations of special wrappers such as calendar waxed paperboard and laminated asphalt papers were carried out to determine their effect on penetration of moisture into rolls in storage. This work showed that with the 3-in. hole in each end of the rolls the penetration was still carried on although not to the same degree or at the same rate.

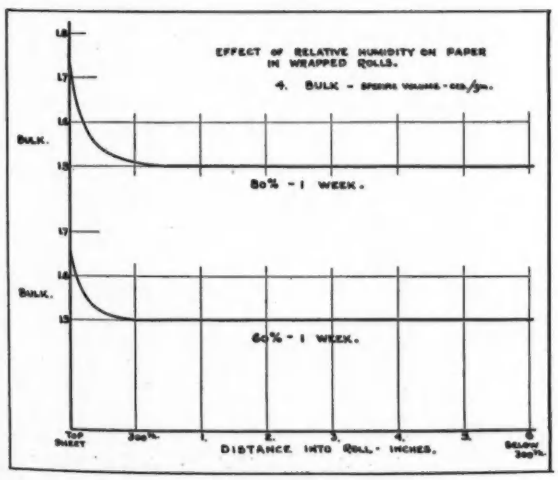

EFFECT OF RELATIVE HUMIDITY ON PAPER IN WRAPPED ROLLS.
4. BULK - SPECIFIC VOLUME - CU. IN./GM.
BULK.
80% - 1 WEEK.
BULK.
60% - 1 WEEK.
TOP SHEET
DISTANCE INTO ROLL - INCHES.
BELOW 3RD IN.

FIG. 5.

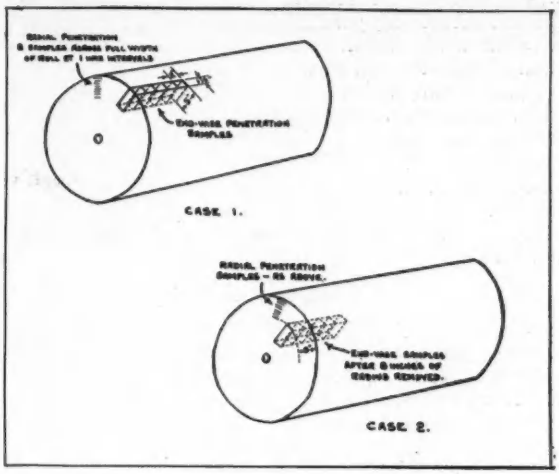


FIG. 6.

End Wise Penetration

Attempts were made to determine the penetration of moisture from atmospheric humidity into the ends of rolls. Two rolls were left in our storage shed for about nine months and then sampled as described below and as shown in Fig. 6.

Five right prisms with a 1½ in. by 2 in. ends were cut successively into the roll (Fig. 6, Case 1). These prisms were 5 in. long, measured radially into the roll. This means that we had five samples, the first including the outer end of the roll, while the fifth

TABLE V.—PERCENTAGE CHANGE IN PHYSICAL PROPERTIES

(One roll stored at 30 per cent relative humidity for 4 days, top sheet under wrapper sampled)

Percentage change in			
Basis Wgt.	Moisture, per cent	Caliper	Bulk
—1.9	—1.9	—1.4	—0.7

TABLE VI.—PHYSICAL CHANGES IN A WRAPPED ROLL OF NEWSPRINT

(Stored for nine months)
Radial samples—Case 1

Sample in. in	Basis Wgt.	Caliper	Moisture, per cent	Bulk
Top ply	34.0	35.0	9.5	1.61
1	33.7	34.5	9.7	1.60
2	34.0	35.0	9.3	1.61
3	33.9	35.0	9.3	1.61
4	33.3	34.5	9.0	1.61
5	33.5	34.7	9.1	1.61
6	33.7	34.5	9.3	1.60
7	33.7	34.5	9.3	1.60
8	33.1	34.0	8.7	1.60
End wise samples				
A (1st from end)			9.5	
B			9.4	
C			9.0	
D			8.3	
E			8.2	

TABLE VII.—PHYSICAL CHANGES IN A WRAPPED ROLL OF NEWSPRINT

(Stored for nine months)
Radial samples—Case 2.

Sample in. in	Basis Wgt.	Caliper	Moisture, per cent	Bulk
Top ply	33.9	37.5	9.8	1.73
1	33.8	36.0	9.6	1.66
2	34.0	35.0	9.0	1.61
3	33.7	34.7	9.1	1.61
4	33.5	34.7	8.8	1.61
5	33.3	34.5	8.6	1.61
6	33.5	34.5	8.0	1.60
7	33.4	34.4	8.1	1.61
8	32.8	34.2	8.0	1.63
End wise samples				
A			9.3	
B			8.7	
C			8.3	
D			8.1	
E			7.4	

was about 10 in. removed toward the center of the roll measuring parallel to the core. At the same time the usual samples were taken at 1-in. intervals radially into the roll to a depth of 8 inches.

Similar samples were taken from the second roll (Fig. 6, Case 2), with the exception that the radial samples were taken first, i.e., 8 inches were torn off the radius of the roll before the prisms were cut. This means that for end-wise samples we had gone below the point at which radial penetration would have its affect. The results are shown in Tables VI and VII.

Conclusions

It is definitely proven that newsprint in wrapped rolls is hygroscopic and responds to changes in atmospheric humidity by corresponding changes in moisture content. It is also proven that the hysterisis effect of atmospheric humidity in so far as finish and caliper are concerned is nonreversible.

The work reported leads to the conclusion that further research work should be carried out on methods of controlling the moisture content of paper at some definite point that must also be determined as the optimum condition for press room operation. It is also apparent that this control of moisture must be maintained throughout the period of time from manufacture to the final use of the paper in the press room.

Further investigation is indicated on the following problems: method of wrapping rolls so as to maintain the moisture content of the wrapped paper at the point fixed at the time of manufacture: the best humidity conditions for storage sheds and whether heated storage has any advantage over unheated storage; and advantage to be gained by controlling humidity in a news pressroom or whether other uninvestigated factors have more effect on the running quality than has the moisture history of the paper itself.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Merrill Eldridge, chemical engineer, Moore Research and Service Company, Niagara Falls, N. Y., is a 1938 graduate of the University of Maine and was formerly chemist for the International Paper Company, Niagara Falls, N. Y.

Frank Huckle, general manager, John Dickinson & Co., Ltd., Kings Langley, Herts., England.

John W. MacAllister, plant superintendent, Norristown Magnesia and Asbestos Company, Norristown, Pa., is a 1921 graduate mechanical engineer of Pennsylvania State College and was formerly engineer for the Scott Paper Company.

John A. MacArthur, plant engineer, Gaspesia Sulphite Company, Chandler, P. Q., is a 1924 graduate of the University of Glasgow and was formerly with the Chemipulp Process Company and the Abitibi Power and Paper Company, Ltd.

Jaakko O. Murto, asst. mill manager, Oulu Osakeyhtio, Oulu, Finland, is a 1932 graduate chemical engineer of the Technical University of Helsinki and was formerly with the Rauna Wood Company and the Diesen Wood Company, Finland.

Glenn O. Neimeyer, chemical engineer, Lowe Paper Company, Ridgefield, N. J., is a 1938 graduate of the Newark College of Engineering.

Harry E. Patterson, quality supervisor, Wood Conversion Company, Cloquet, Minn., has been transferred from associate to active membership.

Leonard S. Prockup, Liverpool, N. Y., is a 1939 graduate of the N. Y. State College of Forestry.

Elwood A. Rose, technical department, W. C. Hamilton & Son, Miquon, Pa., is a 1939 graduate of the Drexel Institute of Technology.

Horace A. Spencer, chemist, Knowlton Bros., Watertown, N. Y., was formerly with the International Paper Company and the Newton Falls Paper Company.

Richard H. Torrey, Riegel Paper Corporation, New York, N. Y., is a 1909 graduate in mechanical engineering of Lehigh University and was formerly secretary of the Defiance Paper Company.

Preston B. Varney, shift superintendent, Pulp Division, Weyerhaeuser Timber Company, Longview, Wash., is a 1929 graduate of Oregon State College.

Carl A. von Ende, chemical engineer, S. D. Warren Company, Gardiner, Maine, is a graduate of the Massachusetts Institute of Technology and the University of Idaho.

Vernon Woodside, technical representative, Mathieson Alkali Company, Charlotte, N. C., is a 1928 graduate of the N. Y. State College of Forestry and was formerly with the Dexter Sulphite Company, the Hammermill Paper Company, the International Paper Company, the Foster Paper Company and the Oswego Falls Corporation.

TAPPI Standards

In a mail ballot the Technical Association of the Pulp and Paper Industry recently voted on the following standards:

Sulphate Recovery Thermal Code, O 404 p-37. To be advanced from tentative to official standard. Attention is drawn to the following correction. In the 9th line from the bottom of p. 1, substitute "gallons x density" for "from weir readings".

Water Soluble Acidity or Alkalinity of Paper, T 428 m-39. To be advanced from tentative to official standard. Of the 8 negative votes against 128 affirmative, 5 preferred cold water extraction and referred to the work of Dr. Launer, however, Mr. Scribner points out that Dr. Launer's references were to pH determinations and did not recommend cold water for titratible acidity, which requires hot water. This method has been adopted, except for electrical insulating papers, by the American Society for Testing Materials under designation of D 548-39 T.

Alpha, Beta and Gamma Cellulose in Paper, T 429 m-39. To remain as a tentative standard and be referred to the new Chemical Methods Coordination Committee for further consideration, in connection with the method for Alpha Cellulose in Pulp, T 203 m-40.

Copper Number of Paper, T 430 m-38. To remain as a tentative standard until correlated with T 215 m-38, Copper Number of Pulp.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING JULY 27, 1940

SUMMARY

Cigarette paper .....975 cs.
Newsprint .....8,839 rolls
Printing paper .....27 cs.
Miscellaneous paper.....30 cs.

CIGARETTE PAPER

Champagne Paper Corp., ——, Bordeaux, 975 cs.

NEWSPRINT

H. G. Craig Co., Inc., ——, Donnacona, 356 rolls.
——, ——, Comeau Bay, 7,560 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 330 rolls.
International Paper Co., ——, Gatineau, 287 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 306 rolls.

PRINTING PAPER

Oxford University Press, ——, Liverpool, 27 cs.

MISCELLANEOUS PAPER

Heemsoth Kerner Corp., ——, Bordeaux, 8 cs.
Chase National Bank, ——, Kobe, 4 cs.
H. Reeve Angel & Co., Inc., ——, Yokohama, 18 cs.

RAGS, BAGGINGS, ETC.

Bank of N. Y. Trust Co., *Mormacmar,* Santos, 10 bls. rags.
Chase National Bank, ——, Liverpool, 18 bls. rags.
E. J. Keller Co., Inc., ——, Bordeaux, 178 bls. old cotton rags.

GLUE STOCK

Manufacturers Trust Co., *Challenge,* Tampico, 106 bls. (dry).

BOSTON IMPORTS

WEEK ENDING JULY 27, 1940

Tupman Thurlow Co., Inc., *Mormacwren,* Buenos Aires, 834 bags casein, 50,040 kilos.
National City Bank, *Mormacwren,* Buenos Aires, 4 bls. rags.
——, —— Yokohama, 15 cs. paper.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 27, 1940

American Cyanamid & Chemical Corp., *Mormacwren,* Buenos Aires, 1668 bags casein, 100,080 kilos.

NORFOLK IMPORTS

WEEK ENDING JULY 27, 1940

American Tobacco Co., ——, Bordeaux, 447 cs. cigarette paper.
Champagne Paper Corp., ——, Bordeaux, 500 cs. cigarette paper.
R. J. Reynolds Tobacco Co., ——, Bordeaux, 2,715 cs. cigarette paper.

NEWPORT NEWS IMPORTS

WEEK ENDING JULY 27, 1940

De Manduit Paper Corp., ——, Bordeaux, 342 cs. cigarette paper.

LOS ANGELES IMPORTS

WEEK ENDING JULY 27, 1940

——, *Rosebank,* Powell River, 1,425 pkgs. newsprint paper.
——, *Yamakaze Maru,* Kobe, 1 cs. cigarette paper.

Philadelphia Paper Men Play Golf

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 29, 1940—With Gordon Smith of Champion Container Corporation as host, the Philadelphia Paper and Cordage Association under the chairmanship of E. L. Richards, Buffalo Envelope Company, held its mid-summer golf tournament on Wednesday, July 24 at the Philadelphia Country Club champion course, Spring Mill, Pa. After a strenuous day on the greensward, members and their guests numbering fifty-five motored to "The Tavern" on picturesque Montgomery Pike, Bala-Cynwyd, where a very enjoyable dinner was served by the genial proprietor, William Everhart, who discussed the various trophies that adorn the walls of this quaint inn, and which he lured from their habitats in far off Quebec and the interior. At the post-prandial exercises, president George K. Hooper paid tribute to E. L. Richards for his fine work as chairman of the golf committee of the association, and then introduced Bill Meeks, executive secretary of The Typothetae of Philadelphia. Mr. Meeks who seems to have an inexhaustible supply of stories for every occasion, had not only the Paper and Cordage group in guffaws of laughter but also those dining at nearby tables. The spotlight was then turned on M. J. Patterson of Parsons Paper Company, Holyoke, Mass., who had traveled 3,000 miles to participate in the tournament.

Following the award of the door prizes, chairman Richards announced the scores and presented the winners of the tournament with prizes as follows: Jack Buchanan and C. K. McGee tied for low gross at 77 strokes; Howard Satterthwaite, president of Schuylkill Paper Company won bright low course prize of a very handsome copper lighting set with tray. The low net was won by R. Shaw of Lee Tire and Rubber Company, and was awarded a Bobby Jones Club. The runner-up for the low net was the congenial Bill Weeks of Typothetae, and was presented with a golf ball. The Putting Contest was won by A. J. Malley, who was presented with a Bobby Jones Golf Club. The Kickers Handicap was won by J. P. Flurey of Gifford Manufacturing Company, and he was presented with a copper drinking set and tray.

PAPER MILL EMPLOYMENT GAINS 10 PER CENT

(Continued from page 7)

ter Power and Paper Company, Wisconsin Rapids; Nekoosa-Edwards Paper Company, Port Edwards; Rhinelander Paper Company, Rhinelander, Wis., and Marathon Paper Mills Company, Rothschild, Wis.

The commission also will hold a hearing at Madison, Wis., August 7 on an application of the Wausau Paper Mills Company, Brokaw, Wis., for authority to continue use of a timber crib dam on the Wisconsin River. The company's concrete dam was washed out in 1938, and repairs have not been completed.

Large Forest Plantings Made This Year

The reforestation program carried on by the Wisconsin Conservation Commission has resulted in the planting of more than 28,000,000 trees this spring, enough to start forests on 25,000 acres of land. Of this amount, 13,996 acres were planted on state and county forests. Largest plantings were: Norway pine, 6,163,700; white pine, 4,351,330; Jack pine, 12,015,752; Scotch pine, 1,929,775; Austrian pine, 123,325, and Norway spruce, 3,759,795. Plantings in privately owned forests, largely operated by paper mills, were 5,595,115 trees.

Pulp Fire Results in Law Suit

Outgrowth of a recent fire which destroyed stored pulp of the Combined Locks Paper Company, Combined Locks, Wis., is a suit for $47,723 filed in the federal district court at Milwaukee, Wis. by four fire insurance companies against I. Bahcall, Inc., Appleton, Wis. This amount was paid to the Green Bay and Mississippi Canal Company, owner of the building destroyed, and the paper company, whose pulp was stored there. Complainants are the Continental Insurance Company, Newark Fire Insurance Company, Phoenix Insurance Company and World Fire and Marine Insurance Company. They allege the Bahcall company had been hired to dismantle machinery in the building, and that the fire started through the alleged negligent use of an oxyacetylene torch.

To Remedy Sulphite Liquor Nuisance

Construction of a sewer is under way for the Northern Paper Mills, Green Bay, Wis., to bring about the elimination of complaints of odors from river pollution. The sewer will carry the sulphite liquor waste into the Fox River instead of the East River, to bring about greater dilution. A "tide" in the East River had been carrying the waste upstream. The project will be completed in about two weeks.

1,500 at Kimberly-Clark Outing

More than 1,500 persons attended the annual picnic of employees of the Kimberly-Clark Corporation's mills at Neenah, Wis., held Sunday, July 21, at Lakeview mill park. S. F. Shattuck, vice-president, gave the principal address of the day in which he expressed the belief that the spirit of democracy is working more genuinely in the Kimberly-Clark organization than in most units of political government.

Cecil Isbel and Don Hutson, players on the Green Bay Packers famous professional football team, put on demonstrations of passes which featured recent games. Both are employed by the company. An autographed football with names of the Packer players, used in last year's games, was awarded to Floyd Kane.

A concert was presented by the Kimberly-Clark band, and a baseball game was staged in which the Badger-Globe mill defeated the Lakeview mill team by a score of 9 to 5. Numerous contests were conducted and prizes were awarded.

Reineck-Ragland Nuptials

Edward A. Reineck, technical assistant at the Institute of Paper Chemistry, Appleton, Wis., and Miss Ruth Ragland of Elmhurst, Ill., were married Saturday morning, July 27, at the bride's home. They are on a honeymoon tour in the South, and will reside in Appleton after their return.

Appleton Wire Works Busy

Production at the Appleton Wire Works, Appleton, Wis. for the first six months of 1940 is higher than that of other years, according to Roy H. Purdy, vice-president and secretary. Demand has been unusually steady and it has been necessary to maintain two 8-hour shifts to keep up with orders.

Lester Smith Returns to Combined Locks

Lester Smith has returned to the Combined Locks Paper Company, Combined Locks, Wis., to become assistant manager. He was formerly employed there as a superintendent while his father was superintendent and general manager. He left the Combined Locks company to take a position with Thilmany Pulp and Paper Company, Keukauna, Wis., and from there went to the International Paper Corporation at Glens Falls, N. Y. He was transferred to that company's mill at Ticonderoga, N. Y., and left that position to return to the Combined Locks organization.

J. H. Smith Heads Hawley Pulp Co.

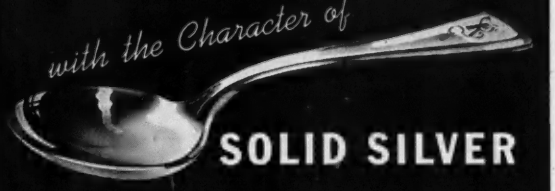
PORTLAND, Ore., July 27, 1940—John H. Smith of Portland was elected president of the Hawley Pulp & Paper Company at a board meeting here. He succeeds Watson Eastman, who died recently. Mr. Smith was formerly executive vice-president, a position which will be left vacant.

Louis Woerner, named president only the previous day of the Western Cooperage Company, was elected a director of Hawley, filling another position left vacant by the death of Major Eastman.

E. A. McGough to be Manager

E. A. McGough has been appointed divisional manager of the eastern division of the Sabin Robbins Paper Company at Philadelphia to succeed H. C. Riley, who died in May. The following persons have been appointed to serve under Mr. McGough, who has been with the company for many years in charge of the Baltimore office:—Harold L. Coffman, city sales manager; Edward T. Linker, office manager in charge of stock maintenance and operations and Charles T. Robinson, warehouse superintendent.

PACKING - with the Character of SOLID SILVER



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PACKING

WHICH WAY IS RESEARCH leading you?

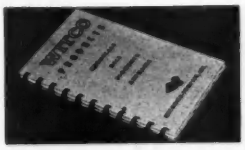
RESEARCH, of course, offers solutions to many definite, immediate problems in production processes and product development. But often in doing so it reveals the existence of other problems which eventually must be faced. And as frequently it uncovers possibilities for product development, improvement or application in entirely new fields.

Perhaps your research has suggested opportunities that you would like to follow up but your facilities are such as to limit further investigation. Or perhaps the energies of your staff are applied only to the solution of immediate and pressing problems.

Witco, manufacturing and supplying a wide variety of chemicals, oils, pigments and allied materials, has recently completed a new research laboratory designed, staffed and equipped to assist customers not only in everyday situations but to supplement their activities in forward research. For example, this laboratory is now helping many industries to use asphalt compounds in new, more economical and profitable ways.

Again, the Witco laboratory has developed for various rubber companies special new synthetic waxes to replace imported waxes. In the field of fatty acids, too, Witco is active and has perfected and adapted various types for general and specific uses.

If your interests embrace the field of chemicals, oils, pigments, asphalts or allied materials, Witco's research laboratory, equipped with new and extensive facilities, may be able to give you valuable assistance.



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New York Paper and Pulp Market Review

Wholesale Paper Market Reported Generally As Seasonally Quiet With No Important Change From Prevailing Market Quotations—Pulp Markets Unchanged—Rag Market Rather Slow—Ledger Stock Prices Lower.

Office of the PAPER TRADE JOURNAL,
Wednesday, July 31, 1940.

The wholesale paper market is seasonally quiet, according to reports received from many manufacturers' representatives, jobbers, and general paper merchants during the current week. The trade outlook is generally viewed as favorable and the general business prospect is good.

The index of general business activity rose to 101.1 per cent for the week ended July 20, from 100.4 per cent for the preceding week, compared with 90.6 per cent for the corresponding week last year.

Paper production for the week ended July 20 was estimated at 92.9 per cent, compared with 78.3 per cent for 1939, with 76.3 per cent for 1938 with 85.9 per cent for 1937, and with 80.3 per cent for the corresponding week for 1936.

Paper board production for the week ended July 20 was 77.0 per cent, compared with 70.0 per cent for 1939, with 65.0 per cent for 1938, with 74.0 per cent for 1937, and with 70.0 per cent for the corresponding week for 1936.

No important change has been reported in the newsprint market during the current week. Domestic and Canadian production continues at a high level, with the prospect that demand from Great Britain will serve to maintain North American newsprint production at a high level, until the Scandinavian countries are in a position to resume shipments of pulp and newsprint.

No important change in paper prices has been reported at this date, although prices are firm. Demand is lagging from many branches of the printing trades and what may be termed seasonally quiet trading now prevails in the wholesale paper market at this date.

Mechanical Pulp

Production of mechanical pulp continues at a high level. Prices hold firm with no changes from prevailing market quotations reported this week.

Chemical Pulp

Reports from some quarters of the chemical pulp market indicate that some mills continue to reflect anxiety relative to the future supply of pulp, especially in good grades of unbleached sulphite. Good grades of kraft pulp continue to be reported as somewhat scarce and the chemical pulp market is in a strong position with prices on all grades firm and unchanged.

Rags

Mill buying in a few grades of rags continues to be reported as moderate, while the general tone of this market is rather quiet. No important change in the prices on any grade of domestic rags has been reported this week.

Old Rope and Bagging

No important change in the old rope market has been reported this week. Prices hold unchanged but are very firm, as little Manila rope is now being shipped from England and Scotland and all other European sources of supply are closed.

The old bagging market is rather quiet, with no important changes reported from prevailing market quotations.

Old Waste Paper

The old waste paper market is reported as fairly firm with few important price changes this week. White ledger stock is lower and currently quoted at from 2.00 to 2.15, and colored ledgers are down to 1.50 to 1.60.

Textbooks Still Going Strong

A report from the McGraw-Hill Book Company to the Textbook Committee, according to R. S. Kellogg, secretary, shows the sale of 1,021 copies of the textbooks during the first half of 1940, which indicates continued and sustained interest in these volumes which have for many years been accepted as authoritative throughout the world.

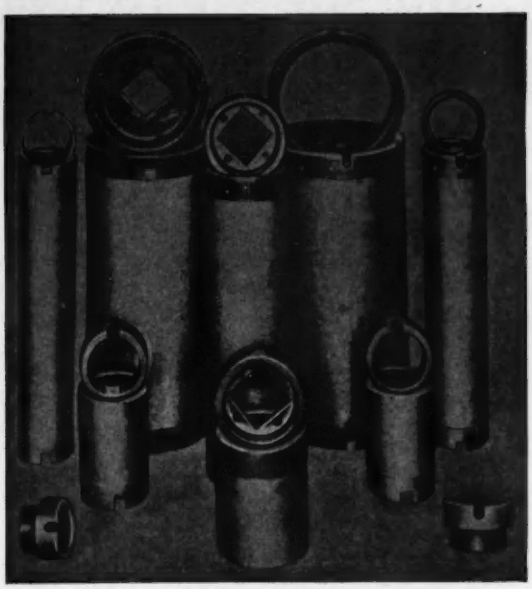
Volume I—the first of the series—was published February 1, 1921. Sales of the individual volumes during the first half of 1940 and totals of all volumes to date have been as follows:

	Textbook Sales	
	1st Half 1940	Total to date
Volume I	85	4,791
Volume II	83	3,985
Volume III	264	9,882
Volume IV	281	7,682
Volume V	308	6,530
Total	1,021	32,870

As is well known throughout the industry, Volumes I and II deal with the preliminary sciences which are necessary to an understanding of the processes of pulp and paper manufacture. Volumes III, IV and V cover these processes completely, and due to the continued progress of the art and science of papermaking, have already been twice revised and are now in their third editions. A total of nearly 33,000 copies sold to date is an impressive record. Many men in responsible positions in the industry today have been helped thereto by their studies of these books, carried on while working at their regular jobs. They furnish convincing examples of the way in which energetic and ambitious young men get the most valuable part of their education.

Natco Waterproof Papers

The National Waterproofing Company, Camden, N. J., has issued a sample book of its large line of water resisting papers, which includes duplex, reinforced, saturated, ribbed batt, waxed and oiled papers, ream wrappers and the black and tan line for extra waterproof protection for export shipments, car linings and many other purposes.



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Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This new patented feature of reenforcement gives added strength and durability.

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Samples of caps or cores will be gladly submitted.

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TILE CHEST

Adapted for Use with Agi-flo Pump

The Shartle Agi-flo agitates and delivers the stock. The Kalamazoo Glazed Tile Chest gives you the advantages of low cost storage and the utmost in cleanliness.

More than 700 installations of Kalamazoo Glazed Tile Tanks now in use prove their unvarying dependability. For maximum efficiency plan to use a Kalamazoo Chest with your next Agi-flo, or any other type of agitator.

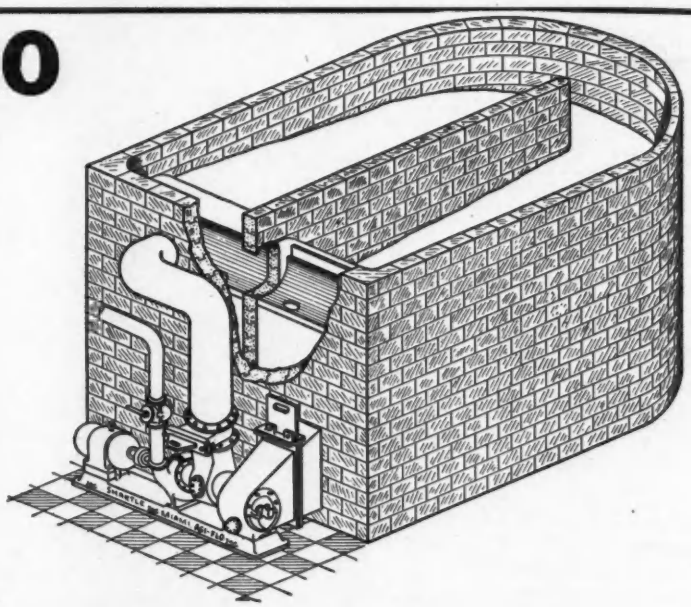

Illustration courtesy of Shartle Brothers Machine Company, manufacturers of the Shartle Agi-flo Pump.

GLAZED TILE

KALAMAZOO TANK & SILO CO.
KALAMAZOO, MICHIGAN

WOOD

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 31, 1940.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm and continue unchanged at prevailing market quotations. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are unchanged for this week. Standard domestic casein, 20-30 mesh, is currently quoted at from 13½ to 14½ cents per pound; 80-100 mesh, at from 14½ to 15½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at from 11½ to 12½ cents per pound; French casein at 15 cents per pound is nominal.

CAUSTIC SODA—Prices on caustic soda are firm and unchanged with trading continuing moderately good. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7 to $15 per ton; coating clay at from $11 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The demand for chlorine is reported as good, prices firm and unchanged for the week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported as firm with prices higher for the week, "G" gum rosin is currently quoted at $1.41 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $1.41 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is offered at $2.45 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices on salt cake are firm under a moderately good demand with current quotations continuing practically nominal. Domestic salt cake is currently quoted at $17 per ton, in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b. shipping point. The quotation of $20 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on sode ash are firm and continue to conform to prevailing market quotations. Demand continues moderately good. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are higher for the week. Pearl is currently quoted at $2.90 per 100 pounds; powdered starch at $3 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm under a moderate demand. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.45 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue unchanged at prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $23 to $45 per ton.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$5.75
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.37½	"	4.62½
Standard Wrapping	4.25	"	—
Tissues—Per Ream—Carlots			
White No. 1	.97½	"	—
White No. 1 M. G.	.95	"	—
White No. 1½	.80	"	—
White No. 2	.75	"	—
Anti-Tarnish M. G.	.80	"	—
Colored	.85	"	—
Kraft	.87½	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.75	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	"	—
Bleached, Jr.	3.60	"	—
Manila—per cwt.—C. l. l. a.			
No. 1 Jute	8.25	@	10.25
No. 1 Manila Wrapping, 35 lb.	5.25	"	—
No. 2 Manila Wrapping, 35 lb.	5.00	"	—
Boards, per ton—			
News	35.00	@	40.00
Chip	35.00	"	40.00
Sgl. Mla. Ll. Chip	55.00	"	57.00
White Pat. Coated	67.00	"	70.00
Kraft Liners	55.00	"	—
Binders Boards	73.00	"	80.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10 @ $46.00		$40.25 @ $47.25	
100% Rag	31.05 " 36.50		32.20 " 37.75	
85% Rag	.... "		29.90 " 35.00	
75% Rag	23.60 " 27.75		24.75 " 29.00	
65% Rag	.... "		21.65 " 26.25	
50% Rag	17.55 " 21.50		18.70 " 22.75	
25% Rag	14.65 " 17.75		15.80 " 19.25	

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$8.95 @ $11.00	$10.10 @ $12.25
No. 2	8.05 " 9.75	9.25 " 11.25
No. 3	7.60 " 9.25	8.50 " 10.75
No. 4	7.30 " 9.00	8.50 " 10.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	8.35	"	9.50
No. 2 Offset	7.70	"	9.00
A Grade E. F.	7.50	"	8.75
A Grade S. & S. C.	7.75	"	9.00
B Grade E. F.	6.95	"	8.00
B Grade S. & S. C.	7.20	"	8.25
C Grade E. F.	6.65	"	7.75
C Grade S. & S. C.	6.90	"	8.00
D Grade E. F.	6.40	"	7.50
D Grade S. & S. C.	6.65	"	7.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	Nominal		
Dry	Nominal		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	45.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	4.50
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	3.75
Strong Unbleached Sulphite	3.17½	"	3.75
(On Dock, Atlantic Ports)			
Kraft Bleached	4.00	"	4.50
Kraft Light & Strong	3.50	"	3.75
Kraft No. 1	3.25	"	3.60
(F. o. b. Pulp Mill)			
Kraft Domestic and Canadian	3.25	"	3.60
(Delivered)			
Soda Bleached	2.90	"	3.30

Add 60 cents per short ton, dock charges for Albanay; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	7.00	@	7.25
Silesias No. 1	4.60	"	4.75
New Unbleached	6.75	"	7.00
Blue Overall	4.50	"	4.75
Fancy	3.25	"	3.50
Washables	2.00	"	2.15
Mixed Khaki Cuttings	2.75	"	3.00
O. D. Khaki Cuttings	3.15	"	3.35

Old Rags

White, No. 1—			
Repacked	3.25	"	3.50
Miscellaneous	2.75	"	3.00
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	2.00	"	2.25
Miscellaneous	1.75	"	1.90
Roofing Rags—			
No. 1	1.10	"	1.15
No. 2	.85	"	.90
No. 3 (bagging)	.90	"	1.00
No. 4	.60	"	.65
No. 5A	.60	"	.65

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxford	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

ASHCRAFT-WILKINSON CO.

Exclusive Distributors for

DUVAL TEXAS SULPHUR CO.

Crude

SULPHUR

99½

Free from Arsenic & Selenium

adequate stocks maintained at both mines
Galveston, Texas

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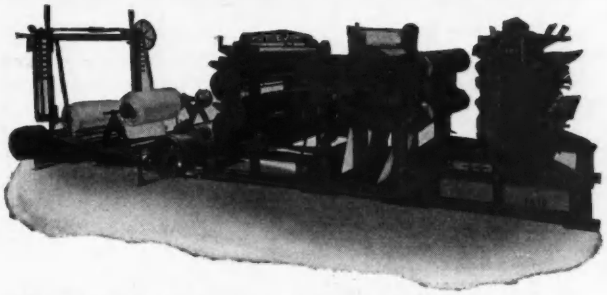

POTDEVIN RUBBER PLATE
PRINTING & DECORATING PRESS

A 4-color, multi-length oil-ink web press for printing bag papers and decorating all types of wrappers.

Skillfully designed . . . precision built . . . you will find this POTDEVIN Model 463 to be a really high quality press. Register and coverage is accurately controlled by very fine adjustments.

Standard POTDEVIN models are built for web widths up to 64" and for printing up to 8 colors.

POTDEVIN MACHINE CO.
EST. 1893
1223 38TH ST. BROOKLYN, N.Y.

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WATERBURY FELTS

Are Made By

H. WATERBURY & SONS CO.
ORISKANY, NEW YORK

PROX-MELT
(NO SOLVENT)

For many purposes Prox-Melt coated papers are equivalent to varnished, lacquered, glazed, and laminated structures.

Melted with heat (and without solvent) Prox-Melt is applied to webs of paper, parchment, foil, and fabric.

Prox-Melt may be decorative, washable, grease repellent, moistureproof, and heat sealing.

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ENGLISH ECCO CLAYS CLAYS

UNIFORM • SUPERIOR • DEPENDABLE

English China Clays Sales Corporation
551 Fifth Avenue, New York City

No. 4 White Linens	2.25	@	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.13
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.75	@	3.00
Domestic	2.50	"	2.75
Wool Tares, light	2.00	"	2.25
Wool Tares, heavy	2.12½	"	2.25
Bright Bagging	2.25	"	2.50
Manila Rope—			
Foreign	4.75	"	5.00
Domestic	4.50	"	4.75
Jute Threads	2.62½	"	2.75
Sisal Strings	2.10	"	2.35
Mixed Strings	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1	2.25	@	2.50
Soft White No. 1	1.80	"	1.90
Soft White Extra	2.50	"	2.60
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag	1.00	"	1.10
Solid Flat Book	1.02½	"	1.07½
Crumbled No. 1	.70	"	.75
Ledger White Stock	2.00	"	2.15
Ledger Stock Colored	1.50	"	1.60
Manila—			
New Env. Cut	1.70	"	1.80
New Cuttings	1.30	"	1.40
Old Kraft Machine Compressed bales	1.75	"	1.85
News—			
No. 1 White News	1.75	"	1.90
Strictly Overissue	.70	"	.75
Strictly Folded	.60	"	.65
Corrugated	.72	"	.77½
No. 1 Mixed Paper	.47½	"	.52½

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.19½	@	—
White Hemp	.19½	"	—
Fine Polished—			
Fine India	.24	"	—
Unpolished—			
Box	.15	"	—
Paper Makers	.15¾	"	—
Tube Rope	.17	"	—
Wall Paper	.16	"	—
Wrapping	.18¾	"	—
Soft Fiber Rope	.16¾	"	—
Cotton	.21½	"	—

(Hard Fiber)

Medium Java	.20	"	—
Mex. Sisal	.17	"	—
Manila	.24¾	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f.o.b. Phila.)

Shirt Cuttings—			
New White No. 1	.07¼	@	.07½
New White No. 2	.04	"	.04½
Light Silesias	—	"	.04½
Silesias, No. 1	—	"	.04½
Black Silesias, soft	—	"	.03¾
New Unbleached	.06	"	.06¼
Washable, No. 1	—	"	.04
Blue Overall	.04½	"	.05
Cottons—According to grades—			
Washable No. 2	—	"	.01¾
New Blue	—	"	.01¾
Fancy Percales	—	"	.03
New Black Soft	—	"	.04
New Light Seconds	.04½	"	.05
New Dark Seconds	—	"	1.55
Khaki Cuttings—			
No. 1 O. D.	.03½	"	.03¾
No. 2 Mixed	.02½	"	.02½
Corduroy	—	"	.03
New Canvas	.05½	"	.06
New Black Mixed	—	"	.03

Domestic Rags (Old)

White No. 1—			
Repacked	3.25	@	3.75
Miscellaneous	2.50	"	2.75
Thirds and Blues—			
Miscellaneous	1.55	"	1.65
Repacked	1.75	"	2.00
Black Stockings (Export)	3.50	"	4.00
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	.90	"	1.00
Domestic No. 2	—	"	.80
Roofing Bagging	—	"	.70

Bagging

(f.o.b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	2.25	@	2.75
Manila Rope	—	"	4.50
Sisal Rope	1.75	"	2.00
Mixed Rope	.75	"	1.00
Scrap—			
No. 1	2.50	"	2.75
No. 2	1.10	"	1.15
Wool Tares, heavy	3.50	"	3.70
No. 1 New Light Burlap	3.00	"	3.50
New Burlap Cuttings	2.00	"	2.25

Old Papers

(f.o.b. Phila.)

Shavings—			
No. 1 Hard White	2.50	@	2.55
No. 2 Hard White	2.10	"	2.15
No. 1 Soft White	2.00	"	2.10
No. 2 Soft White	1.60	"	1.75
No. 1 Mixed	.90	"	1.00
Solid Ledger Stock	1.90	"	2.00
Ledger Stock, white	2.00	"	2.10
Ledger Stock, colored	1.50	"	1.60
No. 1 Books, heavy	1.00	"	1.10
Manila Cuttings	1.90	"	1.95
Print Manila	.65	"	.70
Container Manila	.55	"	.60
Kraft Paper	1.70	"	1.75
No. 1 Mixed Paper	.40	"	.45
Straw Board Chip	.40	"	.45
Binders Board Chip	.40	"	.45
Corrugated Board	.70	"	.75
Overissue News	.75	"	.80
Old Newspapers	.55	"	.60

BOSTON

Old Papers

(f.o.b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.15
No. 1 Soft White	2.00	"	2.25
No. 2 Mixed	.75	"	.80
Solid Ledger Books	1.50	"	1.75
Overissue Ledger Stock	1.75	"	2.00
Mixed Ledgers	.85	"	.90
No. 1 Books, heavy	1.10	"	1.25
No. 1 Books, light	.65	"	.75
Crumpled Stitchless Book Stock	.55	"	.65
Manila Env. Cuttings	1.85	"	2.00
Manila Envelope Cuttings extra quality	2.35	"	2.60
White Blank News	1.40	@	1.50
No. 1 Kraft	1.40	@	1.50
Extra No. 1 Kraft	1.60	"	1.90
Mixed Papers	.45	"	.50
Print Manila	.50	"	.55
Container Manila	.60	"	.70
Old Newspapers	.50	"	.55
Paper Wool Strings	.95	"	1.25
Overissue News	1.00	"	1.10
Box Board Chips	.40	"	.45
Corrugated Boxes	.55	"	.65
Kraft corrugated boxes	1.25	"	1.40
New Kraft Cuttings	2.00	"	2.25
Screening Wrappers	.60	"	.70

Bagging

(f.o.b. Boston)

Gunny Bagging—			
Foreign	2.75	@	—
Domestic	2.25	"	2.50
Sisal Rope	2.25	"	2.50
Mixed Rope	.85	"	1.00
Transmission Rope—			
Foreign	2.50	"	2.60
Domestic	2.40	"	2.50
Soft Jute Rope	3.00	"	3.25
Manila Rope—			
Foreign	4.85	"	5.10
Jute Carpet Threads	1.50	"	1.75
Gunny Bagging—			
Foreign	2.75	"	2.85
Domestic	2.25	"	2.50
Bleachery Burlap	4.00	"	3.25
Scrap Burlap—			
Foreign	2.40	"	2.50
Domestic	2.50	"	—
Scrap Sisal	2.25	"	2.50
Scrap Sisal for Shredding	2.30	"	2.65
Wool Tares, Heavy	2.40	"	2.50
New Burlap Cuttings	3.75	"	4.00
Aust. Wool Pouches	3.00	"	3.15
Heavy baling bagging	2.25	"	2.40
Paper Mill Bagging	1.75	"	2.00
No. 2 Bagging	.75	"	.80

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	—	@	.03
Fancy Percales	.04	"	.04¼
New White No. 1	.07½	"	.07¾
New Light Flannelettes	.05	"	.05¼
Canton Flannel, Bleached	.07	"	—
Silesias No. 1	.05	"	—
New Black Silesias	3.20	"	3.25
Soft Unbleached	.07	"	.07½
Blue Cheviots	.05	"	.05½
Fancy	.02	"	.02½
Washable	.02	"	.02½
Cottons—According to Grades—			
Blue Overalls	.04¾	"	.05
New Black, Soft	.03	"	.03¼
Khaki Cuttings	.03	"	—
O. D. Khaki	.03	"	.03¼
Corduroy	.02¾	"	.03
New Canvas	.06¾	"	.07¼
B. V. D. Cuttings	.07	"	.07¼

Domestic Rags (Old)

(F. o.b. Boston)

White No. 1—			
Repacked	2.75	"	3.75
Miscellaneous	2.40	"	2.60
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues	1.50	"	2.00
Old Blue Overalls	1.60	"	2.00
Thirds and Blues—			
Repacked	—	"	1.25
Miscellaneous	—	"	1.00
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.00	"	1.25
No. 2	—	"	1.10
No. 3	—	"	.90

Foreign Rags

(F. o. b. Boston)

Canvas	.04¼	@	—
Dark Cottons	(nominal)		
Dutch Blues	(nominal)		
New Checks and Blues	(nominal)		
Old Fustians	(nominal)		
Old Linsey Garments	(nominal)		
New Silesias	(nominal)		

CHICAGO

Waste Paper

(f.o.b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	3.15	@	—
No. 1 Hard White	2.50	"	2.65
No. 1 Soft White	2.00	"	2.20
Ledger and Writings	.85	"	.95
Solid Books	.95	"	1.10
Blanks	1.50	"	1.60
Krafts	1.40	"	1.50
New Kraft Cuts	1.60	"	1.75
Overissue News	1.00	"	1.10
Old Newspapers—			
No. 1 Folded News	.70	"	.80
No. 1 Mixed Paper	.40	"	.50
Roofing Stocks—			
No. 1	.95	@	1.00
No. 2	.85	"	.90

Wheeler Roll Co. in New Building

Newest of Kalamazoo's varied industries is the Wheeler Roll Company of 1910 Lane boulevard, fast becoming one of the leading places in the Middle West for manufacture of paper mill rolls and rebuilding or recovering worn paper mill calenders, says the *Gazette* of Kalamazoo, Mich.

Five hydraulic presses and supplementary lathes, one of which is said to be the largest in this part of the country, are set up in the firm's new brick and cement building. They can handle any length paper mill roll now in use anywhere in the country, according to Ward O. Wheeler, one of the partners in the business.

The Wheeler Roll Company serves mills throughout the Kalamazoo valley, which includes all mills in Michigan, and also does business with mills in Ohio, Ontario, Can., Maine and Wisconsin.

Frank G. Wheeler of Appleton, Wis., Ward O. Wheeler of 850 Lay boulevard, and Grant A. Wheeler, 1329 Maple street, Kalamazoo, are the owners and operators.

W. C. Dodge Paper Co. Adds Salesmen

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 29, 1940—The W. C. Dodge Paper Company has taken on a new line of wedding announcements made by the P. P. Kellogg Division of the U. S. Envelope Company, Springfield.

The Dodge company is broadening its field, and has engaged two new salesmen, R. E. Dunbar, formerly with the Groveton Paper Company, Inc., who will cover Boston suburbs and Worcester, Mass., and William P. Browne, formerly with Carter, Rice & Co., Corp., who will cover the Boston territory.